January 12, 1948

STEEL

The Magazine of Metalworking and Metalproducing

ESTABLISHED 1882

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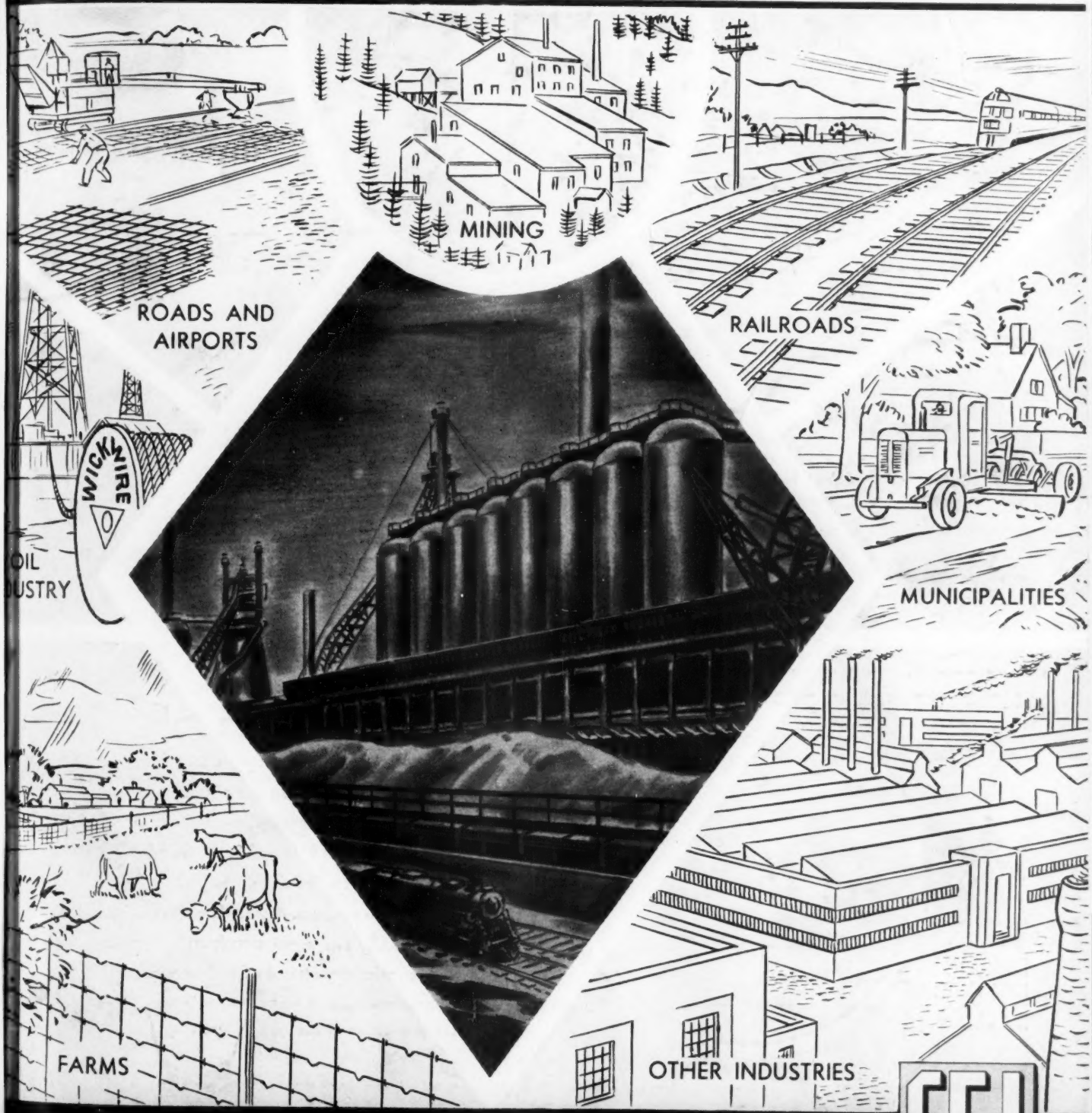

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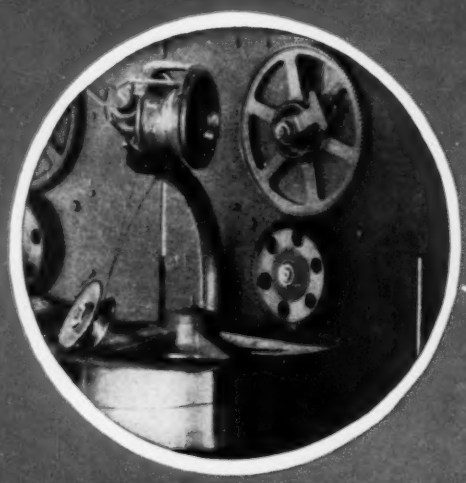
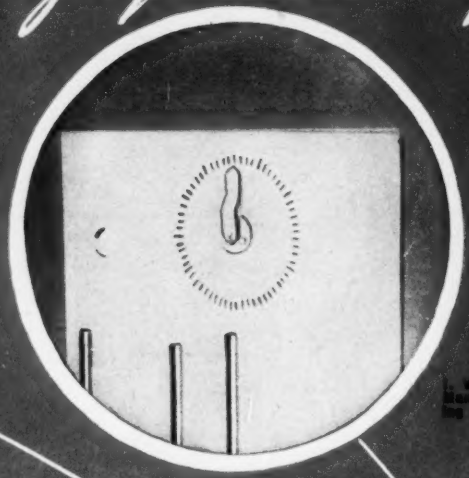
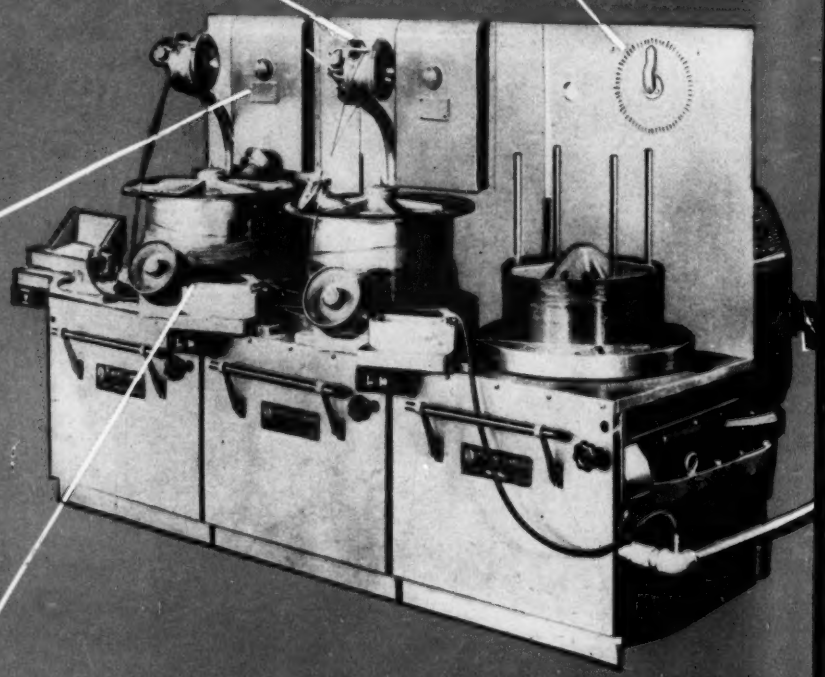
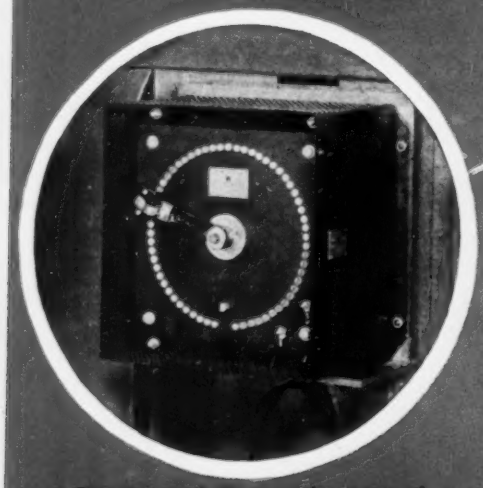


2. Floating sheave and ring over at top of intermediate block actuates rheostatic control gearing automatically.

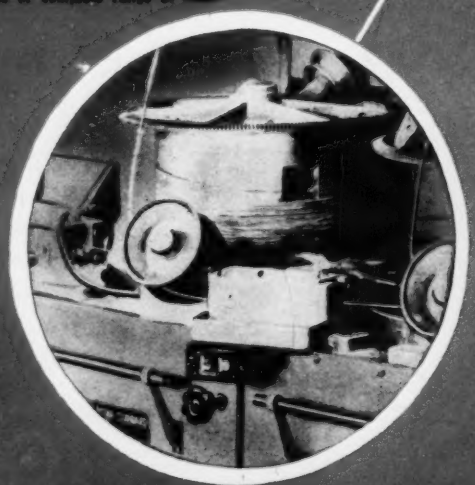


1. Visual dial and pointer for manual setting of wire drawing speed of finishing Unit.





3. Rheostat conveniently mounted on rear of backplate above vertical motor. Control mechanism permits full use of complete range of rheostat and motor.



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STEEL

The Magazine of Metalworking and Metalproducing

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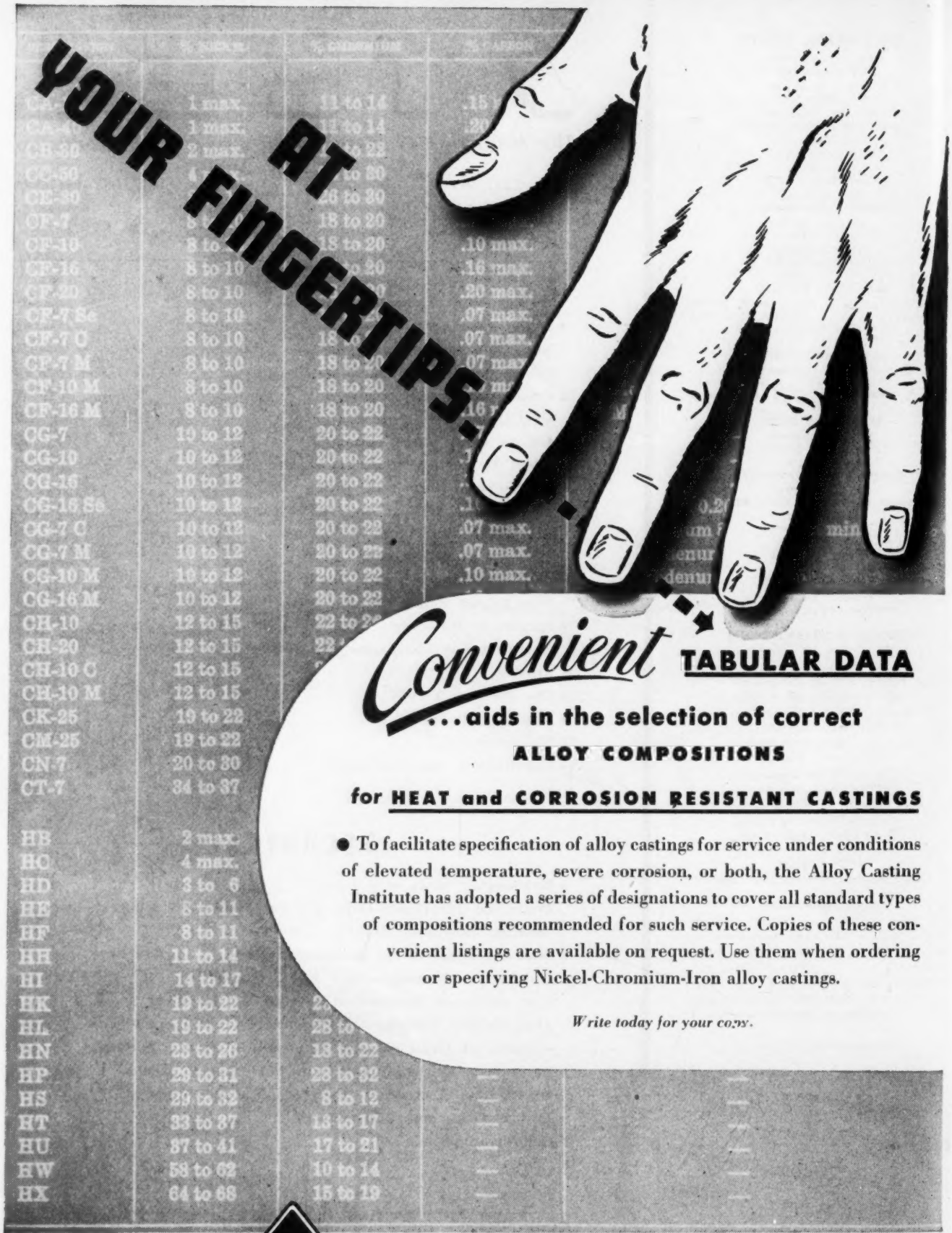

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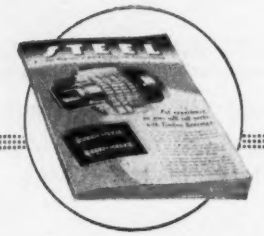


January 12, 1948

Blueprint for Poverty

All Americans and hundreds of millions of persons in foreign countries who look hopefully to this nation for assistance can thank their lucky stars that Congress will ignore many of the recommendations presented by President Truman in his "state of the union" message last Wednesday.

Few public documents can be found that contain as many senseless contradictions as abound in Mr. Truman's 4000-word text. He gives polite lip service to the importance of preserving the free enterprise system and then straightway offers several proposals which would have the eventual effect of destroying that system. He talks sanctimoniously about holding government expenditures "to the lowest safe levels" and forthright asks for immediate expenditures for education, health, more TVA projects, public housing and other schemes which would increase the already high federal budget by $15 billion or more annually and would condemn the nation's taxpayers to another decade or more of taxes at near wartime levels.

From the standpoint of business, the most serious contradictions are the President's recommendations in regard to capital investment by industry for expansion and to corporation taxes. In one breath Mr. Truman recommends that "at least $50 billion should be invested by industry to improve and expand our productive facilities over the next few years" and in the next breath he suggests that corporate taxes be increased sufficiently to produce $3.2 billion of federal revenue to make up for a $40 "cost of living" credit to be extended to each individual taxpayer and each dependent.

Does not the President realize that for 15 years up to 1947 little if any net new capital has gone into American business and that today lack of venture capital is one of the serious problems confronting the nation? Does he not realize that to raise corporation taxes from 38 to around 50 per cent on the basis of one year of superficially good but highly fictitious profits can result only in further drying up the already inadequate flow of venture capital?

In its overall implications, the President's message is a near-perfect blueprint for a decade or more of poverty and not the 10-year prosperity plan that he thinks it is. Fortunately, little that he recommended will be taken seriously.

* * *

VOLUNTARY ALLOCATION: It would be almost impossible to over-emphasize the importance of the plan of voluntary allocation of scarce materials which is being evolved under the provisions of the anti-inflation law enacted during the closing hours of the special session of the 80th Congress.

Those who will be charged with administering this plan are starting out from the premise that the primary objective is to provide so-called essential industries with steel and other necessary materials. Tentatively, the essential items which seem to rate high priorities are freight cars; farm equipment; petroleum production, refining and transportation; nitrogen production equipment; coal mining and processing equipment; certain iron and steel producing equipment and electric generating equipment.

Obviously it is going to be a ticklish job to allocate sufficient steel and other scarce materials to these preferred consumers, to take care of legitimate ERP demands and yet provide enough tonnage for ordinary domestic consumers to prevent undue hardship. If the job can

(OVER)

be done satisfactorily, all will be well. If the plan falls short of reasonable performance, then the hue and cry that will be raised will force the adoption of more sweeping controls and restrictions, which in the end probably would approximate in scope and severity those applied in wartime.

One shudders at the thought of this drastic alternative. That is why every person in government and in industry should co-operate in every possible way to make the voluntary plan successful. —p. 37

* * *

THIS PLAN BACKFIRED: An incident related in "Mirrors of Motordom" illustrates how easy it is to stimulate fantastic prices or even to encourage gray market operations without intending to do so.

An automobile plant, which operates its own foundry, was in dire need of cast scrap. Somebody reasoned that there must be accumulations of scrap on the premises of the company's several thousand dealers and that if incentives were offered, the dealers would send this scrap in to the foundry. The plan was adopted and dealers were offered the incentive of an extra new car for a certain amount of scrap turned in. However, some dealers found this incentive so attractive that they went out and bought scrap from local yards, hoping thereby to get additional extra new cars. Their ingenuity not only spoiled the automobile manufacturer's incentive plan but it also contributed to upping the cast iron price to as high as $80 a ton.

This experience shows how dangerous it is to offer a hard-to-get item as an incentive without figuring the lengths to which human nature will go in response to that incentive. —pp. 39, 51

* * *

NEW USES FOR SLAG: In protesting against the proposed 41 per cent increase in freight rates on slag, the National Slag Association calls attention to a gratifying increase in the utilization of this waste product.

At one time blast furnace slag was thrown away and sometimes its disposal was a serious problem. Today about 65 per cent is used commercially. About 60 per cent of that used goes into highway construction, 25 per cent into railroad ballast and the remaining 15 per cent into rock wool, filter media, concrete blocks and soil additives.

The association is engaged in efforts to find outlets for the 35 per cent for which markets have not yet been developed. It deserves much credit for the progress it has made to date. —p. 43

* * *

THE FAMILY BUDGET: Washington reports that the monthly Consumers' Price Index compiled by the Bureau of Labor Statistics will be used for collective bargaining purposes when the third round of wage increases comes up for negotiation. The index is an attempt to construct a reasonable cost of living budget for a family of four, consisting of man and wife, a son aged 13 and a daughter aged 8. Based upon June, 1947, costs, the annual budget for this family ranges from a high of $3458 in Washington, D. C. to a low of $3010 in Kansas City, Mo.

Of interest to manufacturers is the bureau's estimate that 1000 of these hypothetical families in a year's time will buy 60 cook stoves, 60 refrigerators, 70 washing machines, 10 ironing machines, 10 sewing machines, 60 vacuum cleaners, 30 fans, 40 toasters, 90 smoothing irons, 30 waffle irons, 10 pressure cookers, 790 pots and pans, 500 garbage pails, 30 carpet sweepers, 400 floor mops, 130 clocks and 150 bedsprings.

It may be that the bureau's figures could be useful in market analysis as well as in wage negotiations. —p. 44

* * *

EYE OPENER ON COSTS: In any plant where manufacturing costs seem unduly high, it is a fair assumption that one of the simplest ways of reducing costs is to refine the methods of materials handling. It is realization of this fact that is attracting thousands of industrialists to the second annual National Materials Handling Exposition in Cleveland this week.

Last year's show—the first of its kind ever held—was judged an outstanding success. This year, more than 150 exhibitors are utilizing three times as much floor space to exhibit their equipment and accessories, much of which is being shown publicly for the first time. We predict that this show will be an eye opener to many who are fortunate enough to attend it. —pp. 71, 75

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

SHRINKING SALES AREAS—Metalworking companies located far from steel producing centers may meet greater difficulties in obtaining steel supplies as result of the interim 20 per cent freight increase granted railroads (p. 43). In the postwar sellers' market, trend has been for producers to withdraw from remote areas rather than absorb freight charges. This trend will be accentuated by the higher rates and may presage considerable revamping of the steel distribution pattern. Eventually, the freight rate increase may mean higher prices for both raw materials and finished products.

WAGE DEMANDS—The expected third round of postwar wage increase demands are being formulated by the big metalworking unions. Automobile and electrical workers (p. 41) have announced they will ask substantial advances to meet the increase in living costs and are starting the machinery for negotiations. Unions will follow their usual pattern of asking for a large increase, possibly 25 or 30 cents an hour, but will settle for considerably less.

CASTINGS SHORTAGE—Flat-rolled steel soon may give way to ferrous castings as the No. 1 bottleneck in automobile manufacturing. The shortage of iron foundry products results from the scarcity of cast scrap and the tightness of pig iron. Automakers (p. 51) are turning their attention to aluminum as a substitute and to the possibilities of making synthetic scrap in cupolas.

SURPLUS DISPOSAL—War Assets Administration, with an inventory of $320 million in machine tools, soon will offer these items on a competitive bidding basis (p. 42). Remaining tools will be offered on a fixed price basis for 45 days and then on competitive bids in what WAA hopes will be the final phase of its disposal program.

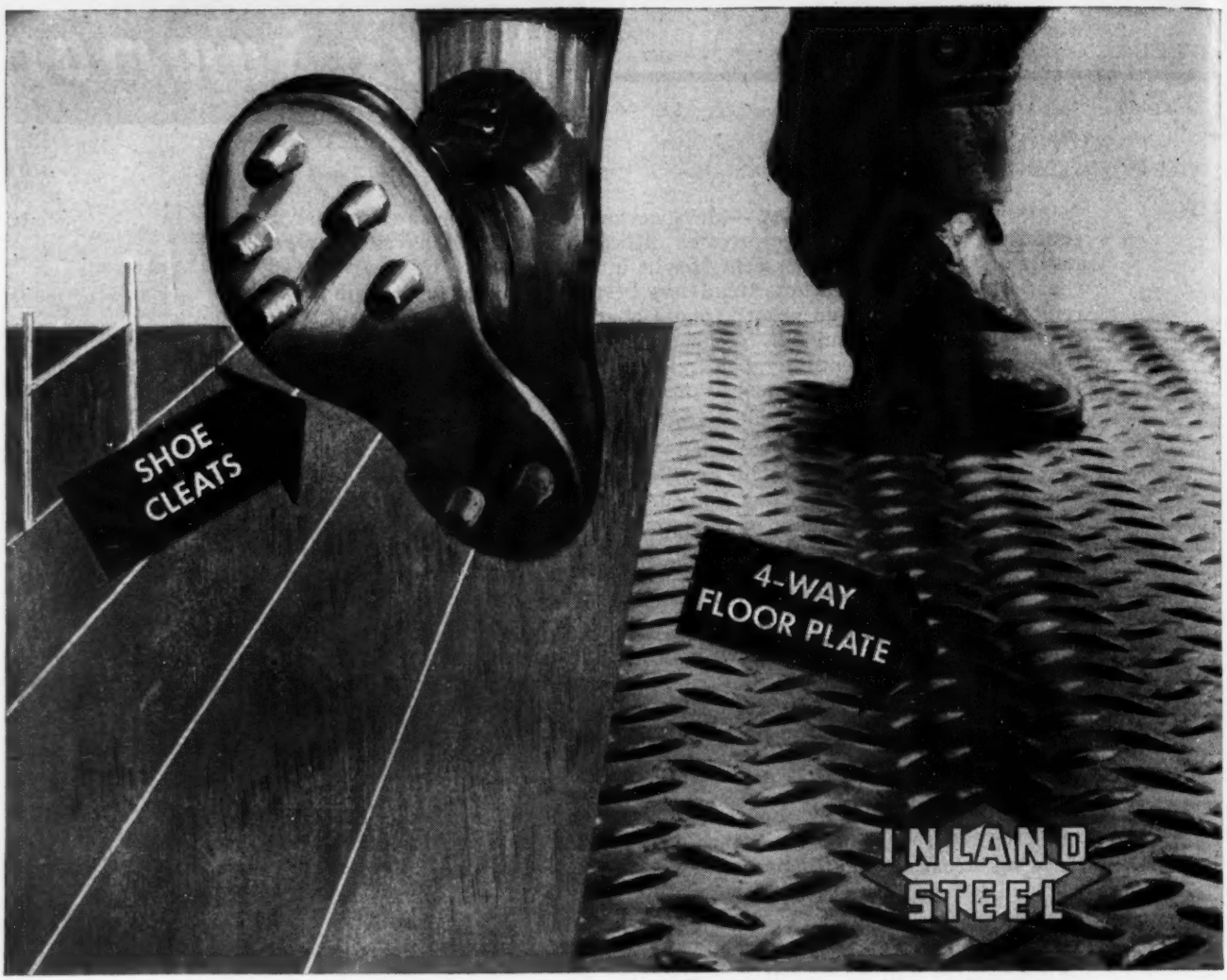
VOLUNTARY ALLOCATIONS—The program under which scarce materials and products will be voluntarily allocated by industry-government co-operation is taking shape (p. 37). Steel will be the guinea pig in the co-operative program. Department of Commerce has established an Office of Industry Co-operation under John C. Virden, Cleveland industrialist and former regional War Production Board director, to administer the program.

GRAY MARKET—Movement of scarce steel products through irregular channels at premium prices continues a prime target for congressional investigating committees. Last week steel men again were called to Washington (p. 39) to offer testimony that is assuming a somewhat fixed pattern, as follows: (1) Producers are not participating or corroborating in any way with the gray market, but are actively combatting it; (2) reports of tonnage involved generally are exaggerated; (3) most participants are fly-by-night operators, interested only in making the "fast buck," and with no previous connection with the industry.

PRICING POLICIES—Long pending complaints by the Federal Trade Commission against the steel industry's pricing policies will be aired in hearings starting today in Washington (p. 40). The industry is charged with "conspiracy and collusive" action to fix prices and "restraint of trade." Practically all the respondents have filed replies denying all material allegations and explaining pricing policies and practices.

SIGNS OF THE TIMES—Slag, once a throw-away material at blast furnaces, is finding larger commercial outlets in highway construction, as railroad ballast, and in other applications. Sixty-five per cent of 1946 production was sold (p. 43) and makers are hopeful that use will be found for total output and possibly for material accumulated in dumps over past years. . . . Freight car loadings last year (p. 56) were the largest since 1930. . . . Canada's import restrictions affect many iron, steel and metalworking products (p. 47), are designed to reduce shipments from the United States by $500 million annually.

Engineering News, P. 65 *Market Summary, P. 115*



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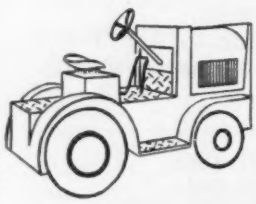

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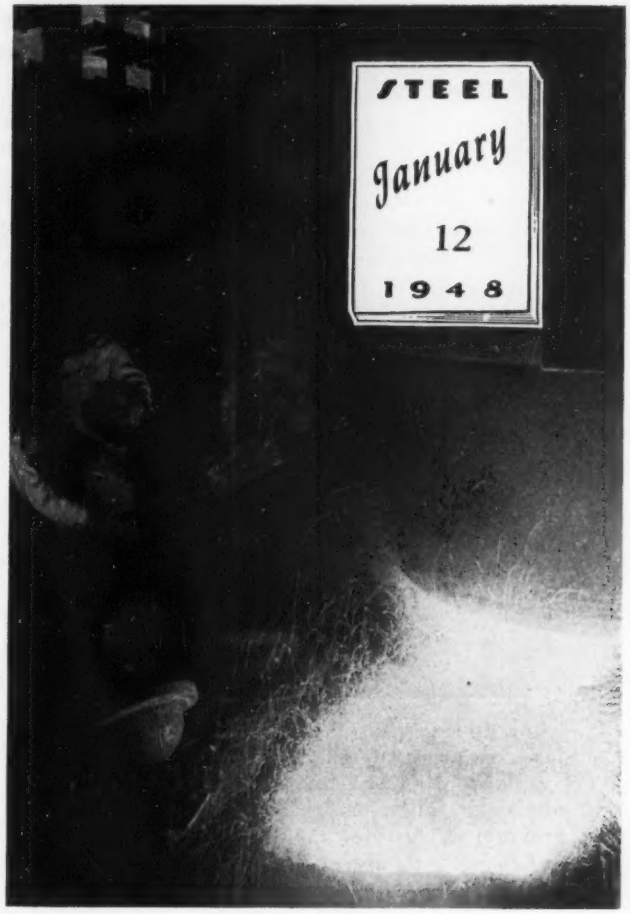
Steel Allocation Plan Taking Form

Organization details and mechanics of operation being worked out rapidly. Commerce Department bureau headed by Cleveland industrialist to administer program. Meeting with steel executives Jan. 8 exploratory in nature



White hot steel flows from ladle to ingot molds at Edgar Thomson Works of Carnegie - Illinois Steel Corp., Braddock, Pa.

WITHIN the next few weeks or so at most the nation should know pretty well the Who, What, When, Where, How and Why of voluntary allocation of scarce materials, especially steel, under the anti-inflation act passed in the dying hours of the special session of the 80th Congress.

For several weeks past the architects of the program have been laying the groundwork for the structure, and last week activity attained fever pitch as the various agencies committed to the task of administration sought to put finishing touches to their plans. This was especially true with respect to steel, which, it appears, will be something of a guinea pig for the entire allocations program.

Move Into Action—With the signing of the anti-inflation act by President Truman on Dec. 30, the government agencies concerned moved into action. In an Executive Order the President delegated authority for administering the law, responsibility for consulting with representatives of industry, business and agriculture on voluntary agreements being placed in those departments and agencies whose functions are closely related to the commodities concerned.

The Secretary of the Interior was made responsible for agreements relating to priorities, allocations and inventory control of coal, coke, petroleum products and natural and manufactured gas. The Secretary of Agriculture will handle agreements relating to agricultural commodities and those with respect to speculative trading on commodity exchanges. Agreements involving allocation of transportation facilities and equipment were made the responsibility of the Director of the Office of Defense Transportation, while responsibility for all other agreements authorized by the resolution, including iron and steel, was assigned the Secretary of Commerce. All agreements must be approved by the Attorney General.

Meet Steel Men — Commerce Department, by far the most deeply concerned in the allocations program, has lost no time in striking out in various directions. Secretary Harriman and his aids met with 19 top steel industry executives at midweek in an exploratory meeting. Prior to that meeting, announcement had been made that John C. Virden, Cleveland industrialist, had been named special assistant secretary of commerce to head up the Office of Industry Cooperation, which is the name under which the allocation agency will function.

Mr. Virden, who will serve as a "dollar-a-year" man, already is in harness and participated in the meeting with the steel officials on Thursday. The new official is experienced in government work, having served as Cleveland regional director of the War Production Board during the war, later serving as a member of Secretary Harriman's Business Advisory Council.

In another direction the department's Office of International Trade announced new export license controls, the Census Bureau laid out a campaign to report inventories of scarce goods, and the Office of Domestic Commerce launched a new study to determine minimum needs of the domestic economy for scarce goods, etc.

Staffs Being Enlarged — The three government departments, it is understood, are taking on an extra 500 or so people to handle the new work, with the possibility the increment may swell to several thousand in event Congress votes additional powers to fight inflation. The act calls on the President to make recommendations for mandatory commodity controls when he finds them necessary.

Administration of the allocations program under Mr. Virden, it is understood, will be in the hands of competent executives from the respective industries. In some cases the services of more than one man will be required. In steel, for example, there is likely to be a pig iron executive, one to administer pipe allocations, another to take care of flat-rolled steel requirements, etc. Just how these administrators will function is not yet clear, but it is assumed the

JOHN C. VIRDEN

Cleveland industrialist and former WPB regional director, Mr. Virden will administer the voluntary allocation program as head of the Office of Industry Co-operation

organization will be patterned, at least faintly, along the lines of the old War Production Board allocations setup.

To what extent steel products will be allocated is uncertain. The meeting of Commerce Department officials with the steel industry executives Jan. 8 was described as "exploratory".

The steel leaders attending the meeting were: Hiland G. Batcheller, president, Allegheny Ludlum Steel Corp.; B. F. Fairless, president, United States Steel Corp.; A. B. Homer, president, Bethlehem Steel Corp.; Charles R. Hook, president, American Rolling Mill Co.; Walter Howell, president, Bliss & Laughlin; Elton Hoyt, Pickands, Mather & Co.; Henry Kaiser and Robert Elliott, the Kaiser Co.; Admiral Ben Moreell, president, and A. J. Hazlett, Jones & Laughlin Steel Corp.; Carl Meyers, president, Colorado Fuel & Iron Corp.; Frank Purnell, president, Youngstown Sheet & Tube Co.; Henry Roemer, chairman, Sharon Steel Corp.; Wilfred Sykes, president, Inland Steel Co.; E. T. Weir, chairman, National Steel Corp.; C. M. White, president, Republic Steel Corp.; Walter S. Tower, president, American Iron & Steel Institute; W. W. Holloway, chairman, Wheeling Steel Corp.; and J. Frederick Wiese, vice president, Lukens Steel Co.

Discussion General—Discussion at the 2½-hour meeting was very general in terms. The steel executives promised the government representatives fullest co-operation in working out the voluntary allocations program and agreed to submit to Secretary Harriman at an early date a panel of top executives from which he can select a Steel Industry Committee. It was assumed this committee will map out the details of the proposed allocations program.

Secretary Harriman did not make any specific recommendations with respect to the channeling of steel to consuming industries, or with respect to production. He opened the meeting with a discussion of the scrap situation and told of a mission to Europe to look into the matter of scrap supply. The steel men told of their difficulties with respect to scrap as well as good quality coking coal.

Mr. Virden, the new director of the Office of Industry Co-operation, was introduced and in a few words he told the steel men what he hoped to do though he said he was unprepared to go into detail. He said he would talk over the problem with Mr. Batcheller and seek to draw upon the latter's experience as chief of wartime steel allocations.

In addition to representatives of the Commerce Department, the meeting was attended by officials from the Agriculture Department, the Interior Department, the Justice Department and the Office of Defense Transportation. One of the Justice Department representatives was John Ford Baecher, assistant to anti-trust chief, John F. Sonnett. Mr. Baecher outlined to the meeting the Justice Department's responsibilities under the anti-inflation law for approving all voluntary allocation programs.

Steel men present at the meeting said that a proposal by Henry J. Kaiser for an impartial steel anti-inflation commission was mentioned only briefly. Kaiser's proposal called for establishment of an impartial "Steel Anti-inflation Commission" to protect small and new manufacturers from being "starved to death for lack of steel" and to prevent gray market operation. The proposal called for a system under which allocations of steel would be made in a "goldfish bowl," with a chance for all aggrieved persons to be heard. Kaiser recommended the proposed commission be made up of Bernard Baruch, John Hancock, Owen D. Young, Robert LaFollette, Herbert H. Lehman, Palmer Hoyt, Robert G. Sproul, Sumner H. Schlicter, Lloyd Garrison, William M. Compton and Eric Johnston.

Following the steel meeting Mr. Virden outlined briefly to reporters his plans for setting up the voluntary program. He said he would consider it necessary to get labor's approval of any programs from the beginning and he hoped to set up joint industry and labor committees. He will insist on having union representatives consulted, declaring that labor should be asked whether it can concentrate manpower on critical items in short supply or in critical areas.

H. B. McCOY

Director of the Office of Materials Distribution and the Office of Domestic Commerce, Mr. McCoy will play a leading role in the voluntary steel allocation program

Mr. Virden also said the steel industry will provide him an industry representative to advise him on drawing up a program for steel. He also stressed the importance of public hearings on any voluntary programs before they are submitted for final approval by the administration.

Co-operation Essential — Since the government agencies have no power under the law to enforce the allocations program, its success will depend upon the degree of co-operation it receives from industry. Therefore, upon the effectiveness of the voluntary program will rest the answer to whether mandatory allocations eventually will be effected since under the law the President must make recommendations for mandatory commodity controls if he finds them necessary. This means that the Commerce Department will have to set

(*Please turn to Page* 136)

Pledge Aid To Curb Gray Market

Steel men tell Macy committee of efforts to track down price gougers. Deny any participation in irregular offerings. Doubt tonnage as large as reported

CO-OPERATION in eliminating the gray market in steel products was pledged by leading steel company representatives last week before the House Public Works Subcommittee, headed by Rep. W. Kingsland Macy (Rep., N. Y.). It was the fourth time in as many weeks that the steel representatives had appeared in Washington for gray market investigations.

The producers told the committee of their efforts to correct the gray market by cutting off shipments to customers found guilty of reselling at premium prices, of refusing to sell to brokers other than established warehouses and dealers, and of investigating many reports of gray market deals. They reiterated that the tonnage moving through irregular channels at premium prices was less than often reported, but admitted that the existence of a gray market was harmful to the industry's public relations and disturbing to consumers.

Asked FBI Aid—Norman W. Foy, general sales manager, Republic Steel Corp., Cleveland, told how his company had called in the Federal Bureau of Investigation to track down "fly-by-night" operators alleged to be offering steel at exorbitant prices.

"We have made a report on these operators to the FBI," Mr. Foy said, adding that the elusive brokers who reportedly had made such offers in the name of Republic had no connection with the company and apparently hoped to collect an advance fee and then disappear.

Tonnage Believed Small—Several spokesmen said they honestly believed the amount of steel moving in the gray market was considerably less than reported.

J. A. Henry, sales vice president, Weirton Steel Co., said: "We have heard a lot about the black market but when we try to run down specific cases we've always found it was a small lot."

J. F. Smith Jr., general sales manager, Inland Steel Co., Chicago, said he would "guess" that less than 1 per cent of the total steel in the industry is moving in gray market channels. "And I honestly think it is less than that."

Bennett S. Chapple Jr., assistant vice president of United States Steel Corp., testified his company consistently had refused to sell for resale except to legitimate warehouses. He said that gray market operators in some instances have evaded legitimate channels by reimporting steel which had been exported from the United States and then selling it at premium prices. This subterfuge was used, he said, to escape the surveillance of the steel companies which are trying to prevent their steel from entering the gray market.

See Customer Co-operation—Several steel companies recently have addressed letters to their customers asking them to advise promptly of any offers by gray market operators involving the company's products. Such knowledge would aid the companies in blocking the gray market brokers, it was pointed out.

Among the steel men who appeared before the Macy committee, in addition to those named, were: C. H. Longfield, Youngstown Sheet & Tube Co., Youngstown, O.; R. C. Todd, American Rolling Mill Co., Middletown, O.; Adam J. Hazlett and Herbert Johnson, Jones & Laughlin Steel Corp., Pittsburgh; J. A. Henry, National Steel Corp. and Weirton Steel Co.; H. C. Schrader, Bethlehem Steel Co.

Representative Macy promised after the initial session that the committee would get down to specific cases in the near future.

Security Resources Board Names Belsley Secretary

G. Lyle Belsley is the new secretary of the National Security Resources Board, Chairman Arthur M. Hill has announced.

Mr. Belsley began his government career in 1928, and among his many positions has been executive secretary of the War Production Board, director of the Bureau of Demobilization, Civilian Production Administration, assistant administrator of the National Housing Agency and assistant general manager of the U. S. Atomic Energy Commission.

Present, Past and Pending

■ SALE OF PLANT TO COLUMBIA STEEL APPROVED
WASHINGTON—Sale of a surplus aluminum reduction plant at Torrance, Calif., to Columbia Steel Co., a U. S. Steel Corp. subsidiary, for $4,200,000 has been approved by War Assets Administration. Columbia plans to house a steel rolling mill on the property. The sale still must have U. S. Justice Department approval.

■ TO INCREASE TELEVISION SET PRODUCTION TEN-FOLD
ROCHESTER, N. Y.—One-third of Stromberg-Carlson Co.'s radio capacity in 1948 will be devoted to production of television sets. This will amount to approximately ten times television output in 1947.

■ ALAN WOOD RECAPITALIZATION PLAN APPROVED
CONSHOHOCKEN, PA.—Stockholders of Alan Wood Steel Co. have approved a recapitalization plan. This ends several years of efforts of management and stockholder groups to settle their differences.

■ SHEET & TUBE PLANS COAL PREPARATION PLANT
YOUNGSTOWN—Youngstown Sheet & Tube Co. will build a large coal preparation plant at its mine at Dehue, W. Va., to provide cleaner coal for coking. Construction will start about Apr. 1.

■ BUDD CO. SELLS INDUCTION HEATING DIVISION
CLEVELAND—The Ohio Crankshaft Co. has purchased for its Tocco Division the Budd Co.'s induction heating division in Detroit.

■ SHOE MACHINERY COMPANY GIVEN ADDITIONAL TIME
BOSTON—United Shoe Machinery Corp., against which the U. S. Justice Department filed a civil antitrust suit, has been given until Feb. 2 to file an answer, more time than is usual.

■ COAL DUMPING FACILITIES TO BE IMPROVED
CLEVELAND—To speed dumping of coal into Great Lakes vessels and the return of empty coal cars to mines, the Chesapeake & Ohio Railway is spending nearly $2 million in yard and dock improvements at Toledo, O.

FTC Opens Steel Case Jan. 12

Producers deny charges and take issue with virtually all government's allegations in "conspiracy and collusive action" complaint

LYNN C. PAULSON

HEARINGS on the Federal Trade Commission's complaint charging the steel industry with "conspiracy and collusive action to fix and maintain delivered price quotations and restrain competition" will open Jan. 12 in the FTC building, Washington.

Date for the hearing was set after the American Iron & Steel Institute and the 101 steel producers named in the complaint filed answers generally denying the charges and taking issue with virtually every material allegation of the FTC's amended complaint. Most of the respondents reserve the right to move for dismissal of the proceeding for "lack of jurisdiction." In only a few of the answers is there any affirmative defense offered.

Deny Manipulation—The answers deny that the respondents have the power to dominate and manipulate the steel products market and that the producers use the Institute as a "medium" for collective action to this end. The amended complaint cited as an "instance in point" collective action allegedly taken through the Institute in connection with the increase in steel prices announced in July, 1947.

Also denied is the allegation that the respondents "reached a meeting of their minds" that it would be to their self-interest "to so act as to forestall increases in steel production facilities" and that they have acted in accordance with such an understanding.

The amended complaint's description of the basing point practices allegedly used by the respondent producers is generally denied in its entirety, although a few of the answers admit the independent use of such practices, denying, however, any collusion or conspiracy.

Freight Rates Compiled for Convenience—The Institute and most of the producers admit that the Institute publishes freight tariff books showing transportation charges for iron and steel products, but they deny the allegation that, as used in accordance with the alleged conspiracy, they are "in reality price books" by means of which identical delivered price quotations are arrived at as to any given destination. The Institute's compilation of freight rates is used only for convenient reference purposes, many of the answers aver, adding that the rates there shown are not uniformly followed in computing delivered prices.

Official Tariffs Followed—A typical explanation of the freight rate situation is that contained in the Republic Steel Corp. response, which declares that the determining factor in selecting the freight rate to be used is the current official rate published by the rail or water carrier.

Each company, explained the Republic document, maintains a traffic department for determining actual shipping charges, including rates and routes. Such calculations are sometimes difficult and technical, and traffic experts sometimes differ as to the proper rate or route involved in a particular shipment. Too, such calculations sometimes differ because changes in the rates or routes have not become known to different shippers at the same time. As a result of this situation, the Institute's compilation is useful only for convenient reference purposes and not for the actual compilation of delivered prices on steel.

Another allegation with which the answers take issue is that for the purpose of preventing price competition, the respondents have collusively classified certain products as "base" products for pricing purposes and agreed upon "extras" and "deductions" to cover variations. Contrary to the allegations of the amended complaint, many of the answers say, price competition among the respondent producers is "keen" and "active and aggressive."

Explain Pricing Policies—Two respondents, National Steel Corp. and Washington Steel Corp., explained their pricing policies which, they said, are arrived at independently.

On steel shipments from Weirton and Steubenville, said the National response, it is customary to quote the prevailing delivered prices in the Pittsburgh switching zone. But the company is willing to sell on an f.o.b. mill basis when the customer so desires. For example, it includes only the actual transportation cost in shipping from Weirton to Wheeling—thus selling into Wheeling at less than the customary delivered price.

In selling to points on the Mississippi river system the company uses water rates when they are available, to which it adds switching charges to customers' plants when such charges prevail. In selling to distant areas which are served also by mills nearer by, Weirton sells at delivered prices—which means a lower net mill yield than it gets on its average business. This system gives the consumer the benefit of more potential sources of supply and of more competition, since if Weirton were forced to sell everywhere at one f.o.b mill price, it would have to withdraw from distant markets it now serves.

Great Lakes Steel Corp. has its own individual pricing system. It quotes uniform delivered prices in the Detroit area—a territory embracing all points located within approximately 10 miles of the center of Detroit. To consumers in an outside belt—ranging from 10 miles to 95 miles distant from Detroit's center—it quotes the Detroit delivered price plus 5 cents per 100 pounds. The latter method results in delivered prices which usually are insufficient to reimburse the steel company for the freight outlay.

Washington Steel Corp., stainless steel specialist, explained that its production site at Washington, Pa., is outside the Pittsburgh switching area. So it meets delivered prices in the Pittsburgh district on carload business, but on less-carloads charges f.o.b. mill at Washington. It meets delivered prices when selling to distant points.

Few Admit Basing Points—Only three respondents admitted the use of basing point methods in their pricing—Cuyahoga Steel & Wire Co., Pacific States Steel Corp. and Continental Steel Corp. Cuyahoga and Continental averred that they at times had "used a basing point method" but did not go into detail. Pacific States Steel Corp. said that it formerly followed basing point practice but discontinued this policy in June of 1946. Now it sells f.o.b. mill at Niles, Calif., to domestic customers, and at San Fran-

cisco or Oakland dock prices for export.

Paulson Is Trial Attorney—Lynn C. Paulson, assistant chief trial counsel and associate chief of the division of antimonopoly trials, will represent the government. He will be assisted by attorneys Morton Nesmith and Paul R. Dixon. Trial examiner will be Frank Hier.

Mr. Paulson is a native of North Dakota, a law graduate of George Washington University, and an unsuccessful candidate for Congress. He served as trial attorney with the FTC from 1936 to 1942. He served in the war on the Judge Advocate General's staff. While in service he was assistant secretary of the International Military Tribunal during the Nuernberg trials and was legal adviser to the Economic Division of the Allied Control Authority in Berlin.

Nesmith is a native of Birmingham, Ala., and has been trial attorney with the FTC since 1934. Dixon, a native of Tennessee, has been with FTC since 1938.

At the opening of the hearings, Mr. Paulson will introduce a number of charts showing the existing basing points for the various steel products. His present plans call for completion of hearings on behalf of the commission before the end of June. Respondents expect innings in September.

Most of the hearings will be held in Washington and New York, but trips will be made to Pittsburgh and Chicago. Whether hearings will be scheduled in the west to examine the charge that the industry's pricing policies have handicapped the industrialization of that area has not yet been determined.

Industrial Supply Men To Discuss Rising Costs

Ways and means to combat spiralling costs will be under discussion at the conference of manufacturers and distributors of industrial supplies at the Copley Plaza Hotel in Boston, Jan. 14.

Members of the American Supply & Machinery Manufacturers' Association and the National Supply & Machinery Distributors' Association will study the high cost of handling small orders, evaluation of markets, packaging and other matters.

Carpenter To Make New Alloy in Wrought Forms

Carpenter Steel Co., Reading, Pa., has developed a method for production of a new super corrosion resistant stainless steel in wrought forms, including bars, wire strip, tubing and pipe. Heretofore, this alloy had been available only in cast form, known as Durimet 20, made by Duriron Co., Dayton, O. Carpenter has now been licensed to produce alloy forms.

Mechanical properties of the alloy are about the same as for 18-8 stainless steel. It analyzes 29 per cent nickel, 20 per cent chromium, 3 per cent copper minimum, 2 per cent molybdenum minimum, 1 per cent silicon, 0.75 per cent manganese and 0.07 per cent carbon.

GE Price Cuts To Save 1948 Buyers $50 Million

Price reductions which have been made on a wide range of its products are expected to save consumers $50 million in 1948, Charles E. Wilson, president of General Electric Co., has announced.

The price reductions, ranging from 3 to 10 per cent, were made on home radios and television receivers, oil and gas furnaces, self-contained air conditioning and water coolers, refrigerators, ranges, vacuum cleaners, automatic blankets, irons, dish washers, disposals, clocks, mixers, coffee makers, waffle irons, grills, heating pads, fractional horsepower motors, ballasts for fluorescent lamps and timers.

Mr. Wilson emphasized that action was taken in belief that restraint could do most to stem inflation.

Unions Open Wage Campaigns

Electrical workers to ask "substantial" increase in discussions with "Big Three" in February. Auto and steelworkers formulating demands for third round raises

MAJOR unions in the metalworking industries are opening their campaigns for the third round of wage increases, to be asked when current contracts expire or can be reopened for wage negotiations.

Last week saw these developments:

United Electrical Workers-CIO—Union announced that it would demand "substantial wage increases" in talks to start in February with General Electric Co., Westinghouse Electric Corp. and General Motors Corp. This action was announced following a two-day conference in New York of 300 union delegates representing nearly 300,000 workers. Exact amount of the increase to be asked was not revealed, although union spokesmen said union workers' buying power has declined $13.03 a week from a year ago. Union has announced it will file a 60-day notice of contract termination with the three large companies on Feb. 1, becoming effective Apr. 1.

United Automobile Workers-CIO—President Walter Reuther announced a new wage drive for its 900,000 members. Exact amount to be asked will be considered by the international executive board at a meeting in Detroit Jan. 15. Some UAW locals have demanded that the board press for an increase of 25 cents an hour.

United Steelworkers of America-CIO — Steel Labor, official union organ, is beating its wage drive drums. Leading articles of the January issue are devoted to attempts to prove: (1) Steelworkers need a wage increase; (2) the industry can afford to grant a wage increase.

These developments come as no surprise to industry. For several months it has been apparent that the union would demand wage increases this spring and that the demands would be based on the increase in living costs and on the 1947 profit showing of industry.

The unions have given little aid or comfort to the various anti-inflation programs advanced. Generally they have taken the position that price control or price roll-backs would be a very fine thing indeed, but that wage controls were another matter entirely.

Labor relations authorities expect all the major unions to come forth with large wage demands for negotiation purposes, possibly 25 to 30 cents an hour, and that the actual settlement will be much lower.

Earlier Settlements—First postwar wage settlement was 18½ cents an hour early in 1946. This settlement was practically forced on the steel industry by the administration which held that organized labor was entitled to a substantial wage increase and that such an increase would not cause prices to rise.

• Second increase came in the winter and spring of 1947 and generally consisted of a "packaged" 15-cent increase, including more liberal holiday pay and other concessions. This was granted during free collective bargaining negotiations with little interference by government agencies.

WAA To Begin Competitive Sales of Tools

COMPETITIVE bid offerings of surplus machine tools will be made by War Assets Administration as the final phase of its disposal plan, WAA field offices were notified last week.

This disposal method will be used as soon as tools have been screened for "stand-by" reserves by the Joint Army-Navy Machine Tool Committee and have been adequately offered at fixed prices.

As of Dec. 1, WAA inventory of tools was estimated at $320 million in acquisition cost. No large offerings of these surpluses has been made since Oct. 1 when a halt on sales was called to allow JANMAT to select the tools it wanted for the national stockpile.

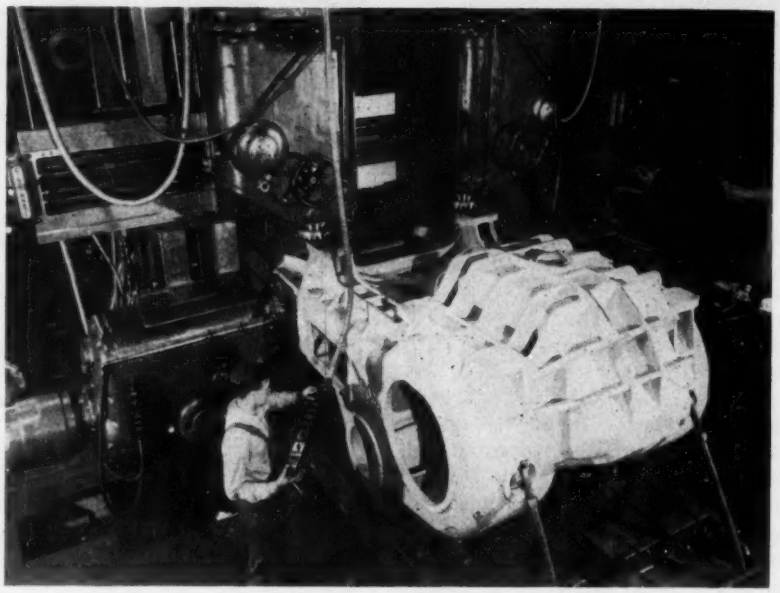
Selling To Begin Soon—Under the new instructions, sales will again begin at each warehouse as soon as JANMAT completes its tagging of wanted tools at that location. Sales for a 45-day period after that time will be made on a fixed price basis, with priority purchasers allowed to buy during the first 15 days, and after that time the remaining tools will be offered to all classes of buyers. During these 45 days, bids will be accepted but awards will not be made until fixed price sales have closed.

Any machine tools still unsold after the fixed price and competitive bid sales will be offered in carload lots to all classes of bidders.

JANMAT's Acquisitions in Clevéland Region Sizable

War Assets Administration warehouses in northern Ohio and western Pennsylvania turned over to the armed forces more than $25.5 million of machine tools and industrial equipment in 1947, according to Harold Mundell, Cleveland regional director. These surplus items were among those selected last year by the Joint Army-Navy Machine Tool Committee.

The services have taken about 80 per cent of the machine tool and 40 per cent of the industrial equipment which have been screened in the Cleveland region. About 14,000 items in the region's inventory are awaiting inspection, tagging or shipping instructions.



NEW MILLER: This new planer-type milling machine recently was installed at Wilson-Snyder Mfg. Division of U. S. Steel's Oil Well Supply Co. Operating the push-button keyboard is Walter O. Lundberg as an 18,000-lb casting goes under the machine's multiple-edge revolving cutters as the first step in machining it into a gear assembly housing

West Coast Outlook Promising

MOST officials of West Coast industries have entered the New Year in an optimistic frame of mind. In general, they are more cautious than a year ago in their planning but they are uniformly hopeful that 1948 will see a continuation of high consumer demand.

The biggest single note of uncertainty is the cost factor. Most observers expect a third round of wage increase demands in the spring. The result, they fear, may be to raise prices beyond the point where consumers will buy freely. That trend is already apparent in luxury lines.

Completing Facilities—One of the promising developments of the new year will be completion of new facilities for production of steel products. Bethlehem Pacific Coast Steel Corp.'s plant in southern California this month will double its annual 7600-ton capacity when it begins operation of a new electric furnace, largest and most modern on the West Coast. Bethlehem this year also will complete a $2 million wire mill in southern California and other projects in its current $14 million expansion program.

Kaiser Co. Inc. is expected to complete an $11 million expansion program at Fontana this month. Under the program it put into operation last week a $7 million pipe mill.

Columbia Steel Co. (U. S. Steel subsidiary) has started partial operation of its new $25 million sheet rolling mill at Pittsburg, Calif., and soon will have the plant in full operation. Production will be 300,000 tons a year. Columbia expects to break ground sometime this year on a similar mill in southern California.

The problem of rising costs is troubling many manufacturers who have blueprinted plant construction. Although some 200 industrial and commercial firms around San Francisco will do $250 million worth of new construction work in 1948, it is estimated the total would be half again as large if high building costs did not stand in the way. Three new auto assembly plants will go into operation in Los Angeles this spring.

Columbia Steel Output Hits Record at Pittsburg

Columbia Steel Co., West Coast subsidiary of U. S. Steel Corp., established a record in 1947 by shipping more than 300,000 tons of finished steel from its Pittsburg, Calif., plant, O. L. Pringle, vice president in charge of operations, has announced.

This compares with the old record of 293,144 tons established in 1944.

Freight Rise Limits Steel Sales Areas

FURTHER CHANGES in marketing areas for many materials and products are expected to result from the interim 20 per cent freight rate increase that became effective last week. Other results will be higher production costs for manufacturers and eventually, probable increases in cost of goods to end consumers.

Among anticipated developments are further withdrawals of steelmakers from market areas distant from their plants to avoid absorption of additional freight charges.

Sales Areas Shrink—With demand exceeding supply, steelmakers since the war have been inclined to concentrate sales nearer home rather than absorb freight on distant area deliveries. Each freight rate increase tends to intensify the concentration of sales nearer the mills.

As in previous instances of percentage increases in freight rates, the latest action has placed Pittsburgh steel mills at a greater competitive disadvantage on shipments into major consuming areas. In June, 1946, the rail rate to New York from Pittsburgh was 36c per 100 lb against 51.6c at present. From Bethlehem, Pa., the rate has increased from 17 to 24c. Freight absorption on shipments from Pittsburgh to Detroit is $5.40 a ton. Allowing for $3 arbitrary price differential, similarly on shipments from Chicago to Detroit, the freight absorption is $5.16 a ton. This situation, according to steel producers, necessitates revision in Detroit and eastern Michigan arbitrary price differentials.

Furthermore, leading steel producers are expected to raise arbitrary switching charges 10c a ton on finished steel shipments to reflect the latest freight rate increase. In fact, one seller already has taken such action.

May Affect Prices—Generally, steel companies do not feel it is advisable now to increase steel prices to cover the rise in freight rates. Not only in the sales end of business will the freight rate increases have repercussions; the production end will feel them too in the form of additional costs in procurement of raw materials and components.

One steel producer estimated that on shipments of incoming raw materials the latest freight rate rise represents an advance of about 80c a ton in production costs of finished steel products.

The 20 per cent freight rate increase, for railroads, water carriers and freight forwarders, is applicable until June 30, 1948, and supersedes the 10 per cent increase granted on a temporary basis to those carriers in October. In granting the new interim increase, the Interstate Commerce Commission said it was convinced there was need for immediate action permitting further substantial increases over the 10 per cent granted last October because of increased railroad wages and costs of materials, fuel and supplies.

The ICC estimated that the latest increase would add $1,230,000,000 a year to railroad revenues.

Some Exceptions—Some commodities will not take the full 20 per cent increase. The basic line-haul rates on iron ore, aluminum ore, copper ore, lead ore, and zinc ore and their concentrates will be increased 20 cents a ton, net or gross, for the temporary period, but no increases are to be made in rates on iron ore to, or handling charges at, upper lake ports.

Basic line-haul rate on coal and coke, may be increased 20 cents a net ton, or 22 cents a gross ton, with a single increase applied to rail rates where there is an intervening movement by water. The iron ore and coal and coke increases are double those granted in October.

Resources Board Seeks Metal Industries' Advice

The metal industries are well represented in a group of 14 industrial leaders invited by Arthur M. Hill, chairman, National Security Resources Board, to give advice at meeting in Washington, Jan. 14, on scope and content of the board's general program.

Included are Thomas P. Archer, vice president, General Motors Corp.; Hiland G. Batcheller, president, Allegheny Ludlum Steel Corp.; James S. Knowlson, president, Stewart-Warner Corp.; Gen. Brehon B. Somervell, president, Koppers Co. Inc.; J. Carleton Ward, president, Fairchild Engine & Airplane Corp.; and Charles E. Wilson, president, General Electric Co.

Also included are the following industrial mobilization leaders of World War II: Ralph Budd, Ferdinand Eberstadt, John M. Hancock, William H. Harrison, Eugene Holman, William E. Levis, John Lord O'Brian, and Arthur D. Whiteside. Thomas J. Hargrave, chairman, Munitions Board, also will participate in the meeting.

Slag Finds New Uses

RECENT protest by the National Slag Association against the proposed 41 per cent increase in slag freight rates, with a ceiling of 33 cents a ton, has focussed attention on the increased utilization of this material. At one time, blast furnace slag was thrown away; in fact, at many stacks the disposal of slag was a serious problem.

Now about 65 per cent of all blast furnace slag is used commercially. Of 29.5 million tons produced in 1946, a market was found for 16 million tons. About 60 per cent went into highway construction, 25 per cent into railroad ballast, and the remainder into such products as rock wool, sewage trickling filter media, concrete blocks and soil additives to neutralize acidity.

Research efforts by the National Slag Association are largely responsible for the increased commercial use of the material. The association hopes to find commercial outlets for the 35 per cent of slag output for which a market has not yet been developed and also for the vast accumulations in dumps.

Managing Director E. W. Bauman, a former Republic Steel Corp. man, told the Interstate Commerce Commission at recent hearings that the increased freight rates would place large obstacles in the path of the association's program and might cause the carriers to lose a lot of business.

Leaders of the slag association are well known in the metalworking industry. President is W. E. Bliss, Standard Slag Co., Youngstown; vice president is E. L. Flad, Carnegie-Illinois Steel Corp., Pittsburgh; director of research, Fred Hubbard, Standard Slag Co.; consultant, H. J. Love, former managing director of the association. Mr. Bauman is secretary as well as managing director.

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

Consumers Price Index, government's measure of the cost of living, explained as labor prepares to launch drive for third round of postwar wage increases

WITH labor unions basing their demands for a third round of wage increases squarely upon the rising cost of living, employers over the next several months will be confronted across the bargaining table with the Consumers' Price Index of the Bureau of Labor Statistics.

This monthly tabulation is important for two reasons. First, it is the government's official measure of the cost of living. Second, and perhaps more important, the labor unions accept it for collective bargaining purposes. What, then, does this index include, and how is it compiled?

Answers to these questions are set forth in a voluminous report prepared by Ewan Clague, commissioner of labor statistics, for the Joint Congressional Committee on the Economic Report. The report, at the committee's request, covers living expenses of workers residing in cities; since the great majority of industrial workers reside in cities, the committee felt, an index for cities only, rather than for the country as a whole, is necessary for collective bargaining purposes.

Modest But Adequate Budget—The Bureau's tabulation, explains Mr. Clague, "is based on the kinds of goods and services workers' families actually select. It is descriptive of a modest but currently adequate United States standard of living. It is not a subsistence budget; it is not a 'minimum' budget; it is far from a luxury budget. It does not represent an 'ideal' budget or one based on a few people's notions of what workers should have."

Mr. Clague thus verifies the general understanding that the new Consumers' Price Index actually is a compilation showing what workers do with their dollars, including those dollars that go for purposes other than to meet the bare cost of living. His explanation makes more understandable the general endorsement of the index by the labor unions. Being a reflection of what the average worker has been spending, the index provides a springboard for calculating the amount of wage increase needed to prevent any deterioration in the scale of living due to the rise in basic living costs throughout the country.

Family of Four—The family for which the compilation has been made consists of a man and wife and two children—a boy aged 13 and in high school, a girl 8 and in grade school, and the wife devoting her full attention to care of the home and children. Two major steps were taken at the beginning. First, the bureau obtained from the Food and Nutrition Board of the National Research Council details of a diet required to maintain good health. Second, the bureau made a list of the food purchases of families who were setting their tables approximately at the level of the standard recommended by the Food & Nutrition Board.

Thus the food budget, Mr. Clague explains, is based upon the "eating habits of American families, as reported by the families themselves." It is a fairly modest food budget. "It provides for 6 loaves of bread a week for a family, 12 quarts of milk or about 3 per person per week, about 20 eggs a week, and about a pound and a half of butter or margarine. These quantities are below the average per capita consumption for the United States as a whole.

Meat Budget Below Average—"When it comes to meat, these families can buy about 9 pounds of all kinds of meat per week or a little over 2 pounds per person. This is about two-thirds of the average per capita consumption of meat in the United States in 1946, which was 185 pounds. About three-fifths of the budget for meats is made up of what is ordinarily fairly low-cost meat—stews, hamburger, frankfurters, and fish, for example. When it comes to steak, higher-priced chops, poultry and other typically high-cost meats, only 33 pounds a year are provided. This means that there is just about enough for a turkey or some good cut of meat for Thanksgiving, Christmas and New Year's Day.

"We recognize that every family will shop differently in buying food. Families will buy what they like and know how to cook and will sacrifice elsewhere in the budget if necessary to get the food to which they are accustomed. Accordingly, foods are shown by groups, with full knowledge that if the family likes beans better than spinach they will buy beans. We have not tried to tell the American people the precise kinds and quantities of things they ought to eat. This is what families generally do eat at the budget level."

Food Costs Rise Sharply—Once this food list was determined, the bureau set out to tabulate prices in each of 34 cities. Washington, which has the highest living costs in the nation, reflected a rise in the food bill for a family of four from $807 in March of 1946 to $1040 in June of 1947.

"Broadly speaking, this food budget in the 34 cities required an expenditure of about $15 a week or 18 cents per meal per person in 1946, and nearly $20 a week or about 24 cents a meal per person in 1947 . . . Taking the 34 cities as a group, it can be said that the total cost of food amounted to about one-third of the total cost of goods and services in March, 1946; while in June of 1947 food absorbed 36 or 37 per cent of the total. This latter proportion is higher than it was before the war."

Housing Costs Steady — The housing standards adopted by the bureau are those of the American Public Health Association and the Federal Public Housing Administration: Separate house or apartment for each family; running water; private bath

FCC HEAD: Wayne Coy, former radio director of the *Washington Post*, has been named new chairman of the Federal Communications Commission, succeeding Charles Denny, who resigned last fall. NEA photo

this electronic temperature control

reduces this ring gear hardening job

to this push-button simplicity

PATENTS PENDING

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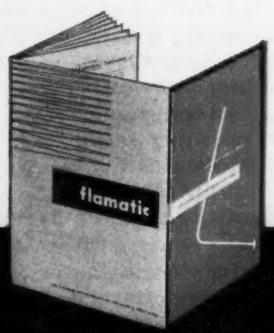

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and toilet facilities; central heating equipment in the north and customary heating in the warmer parts of the country, and necessary fuel for maintaining 70 degrees Fahr. during the winter months; certain safety precautions and community facilities required for adequate housing. The bureau used rented houses and apartments only in calculating the housing budget "because we do not as yet have sufficient information on the cost of home ownership."

Cost of housing and home maintenance for a family of four was found to have been $840 a year or $70 a month in Washington in March of 1946, and $868 a year or $72 a month in June, 1947. Parallel figures at Kansas City were $598 and $612. Generally speaking, housing took about one-fourth of the total for goods and services (exclusive of taxes, contributions and insurance).

For expenditures for clothing, transportation, household furnishings and some other items the bureau was unable to discover any usable standards. So it decided to analyze the expenditure habits of the families in buying these items.

Purchases Level Off—"As the family incomes increase the families have a tendency to buy more shoes, dresses and pieces of furniture, for example," says the report. "Up to a certain point they may even buy more such items than the percentage rise in family incomes would suggest. But eventually they reach a point beyond which they do not keep on buying so many additional shoes and dresses with each improvement in the family income. Instead, they prefer to buy goods of higher quality, better workmanship and finer appearance, often at higher prices."

Annual cost of clothing for a family of four in Washington was $409 in March of 1946 and $462 in June of 1947. Parallel figures for Kansas City were $364 and $410.

Furnishing Purchases — The house-furnishings budget for a family of four, the report said, is not sufficiently illuminating, because at that stage a family usually has built up a well-equipped home. But the list of furnishings bought, and the volume in which they are bought, by such families, is interesting to many metal-working companies. The bureau estimated the following annual purchases per 1000 such families: 60 cook stoves, 60 refrigerators, 70 washing machines, 10 ironing machines, 10 sewing machines, 60 vacuum cleaners, 30 fans, 40 toasters, 90 smoothing irons, 30 waffle irons, 10 pressure cookers, 790 pots and pans, 500 garbage pails, 30 carpet sweepers, 400 floor mops, 130 clocks and 150 bedsprings.

Washington figures for certain items, on an annual basis for a family of four, for March, 1946, and June, 1947, were: Transportation $227 and $250, medical and dental care $173 and $184, miscellaneous $262 and $307. Federal and state income and social security taxes were included, but local property taxes omitted.

The following table represents the bureau's computation of the living expenditures of an average working family of some representative industrial cities. While the computation gives figures for March of 1946 and June of 1947, the latter figures can be considered as fairly representative at the present time. Rough correction can be made by adjusting on the basis of the bureau's monthly Consumers' Price Index. For example, the index for different dates stood at the following levels: 98.6 on Aug. 15, 1939; 133.3 on June 15, 1946; 158.4 on July 15, 1947; 163.8 on both Sept. 15 and Oct. 15, 1947.

	June 1947		March 1946	
City	Total Cost of Goods & Services	Estimated Total Cost of Budget	Total Cost of Goods & Services	Estimated Total Cost of Budget
Washington	$3111	$3458	$2718	$2985
Seattle	3054	3388	2660	2913
New York	3019	3347	2583	2820
Milwaukee	2988	3317	2575	2811
Boston	2981	3310	2598	2842
Detroit	2974	3293	2578	2813
Pittsburgh	2973	3291	2535	2761
Minneapolis	2965	3282	2550	2779
Chicago	2965	3282	2561	2793
San Francisco	2964	3317	2582	2853
Baltimore	2944	3260	2565	2797
St. Louis	2928	3247	2580	2824
Los Angeles	2910	3251	2512	2766
Birmingham, Ala.	2904	3251	2521	2781
Cleveland	2897	3200	2495	2712
Denver	2870	3168	2494	2711
Philadelphia	2867	3203	2442	2681
Scranton, Pa.	2866	3163	2422	2623
Buffalo	2844	3136	2415	2615
Manchester, N. H.	2837	3132	2481	2700
Cincinnati	2830	3119	2467	2678
Indianapolis	2790	3098	2440	2667
Houston	2746	3020	2345	2532
Kansas City, Mo.	2739	3010	2405	2603

Wisconsin Seeks Diesel Plant

Wisconsin diesel engine manufacturers have launched a strong campaign to obtain for their state university the world-famous Klockner-Humboldt-Deutz diesel engine laboratory at Oberursel, Germany. Since announcement by STEEL (STEEL of Dec. 15, p. 70) that this plant was to be brought to the United States, hundreds of letters have come in from Wisconsin industrialists in many different lines who want the laboratory located at Madison.

While no decision has been reached, and the competition is strong, the initiative shown by Wisconsin manufacturers has put that state distinctly in the running. In the opinion of the Office of Technical Services, Commerce Department, the diesel engine industry in Wisconsin is of an importance that insures the necessary "know-how," while the attitude being demonstrated by the industry insures that establishment of the laboratory at Madison would bring plenty of the sort of backing —lectures, engineering assistance, etc.—that is essential to make a continuing success of such a project.

Iron, Steel Study Delayed

Completion of the Department of Commerce's projected book on the iron and steel industry in all its phases has been held up by numerous interruptions, due to the need for compiling reports for use both by Congress and the administration in considering what action to take in regard to providing for steel allocations; also due to special studies which have been made of steel requirements under the European Recovery (Marshall) Plan. The book now is expected to make its appearance "some time during the first half of 1948," in the opinion of Dr. Robert M. Weidenhammer, who is responsible for this project.

Directs Defense Research

Under a directive by Secretary of Defense Forrestal, the new Research & Development Board created by the National Security Act of 1947 now is in a position to assume top responsibility for the research and development programs of the Army, Navy and Air Force.

The directive authorizes the board "to make decisions and resolve differences on research and development subjects among the several departments and agencies of the National Military Establishment." It bears responsibility for allocating projects of joint interest and, to the extent necessary, has the power to reallocate. It is to develop a technique for informing the Joint Chiefs of Staff and the various services about new scientific advances and about new weapons requiring consideration.

The board also is charged with responsibility for informing the Munitions Board as to the requirements of materials and components indicated by findings in the overall research and development program.

In addition to the chairman, Dr. Vannevar Bush, the board is composed of two senior representatives from Army, Navy and Air Force. The members are: Army, Gen. Jacob L. Devers and Maj. Gen. Henry S. Aurand; Navy, Adm. DeWitt C. Ramsey and Rear Adm. Paul F. Lee; Air Force, Gen. Joseph T. McNarney and Maj. Gen. Lawrence C. Craigie.

Canadian Import Control Drastic

By banning some products, setting up quotas and restrictions on others, Canada hopes to stop drain on dollar reserves. Licensing to be required on most capital goods

MOVING to conserve its dwindling dollar reserves, the Canadian government recently announced a plan immediately banning imports of some 40 groups of products, setting up import quotas on another long list and establishing import controls on capital goods, including all metals or metal products except equipment for farming and fishing.

Canada's dollar reserve has been diminishing each month by about $70 million, the result of buying about twice as much in the United States as it sells in this country. On a world-wide basis Canada's trade balance continues to be favorable and in normal times this surplus of exports over imports would permit dollar payment for American goods. However, those countries to which Canadian exports have been heaviest are now critically short of dollars too, and the direction of dollar movement has been overwhelmingly one-way.

Measures Seen Temporary—Canada hopes to reduce its U. S. imports by approximately $500 million this year, after which time it is thought the restrictions can be lifted because of the improved financial position of the countries participating in the Marshall Plan. Canada's trade deficit with the United States, however, is about $300 million greater than this figure and to offset the continuing loss of dollars, Canada, at the time of the action, was granted a loan of $300 million by the Export-Import Bank. The Canadian government is hopeful, however, that this loan need not all be spent in the coming year, and expects its planned boost in gold production (resulting from subsidies to marginal producers) will add $50 million in its exports, and perhaps an additional $100 million will be attracted to Canada as the result of 1948 Marshall Plan purchases.

American manufacturers view with considerable dismay the Canadian government's action because Canada has been far and away the most important importer of this country's products. Last year, for example, it took more than twice the dollar value of the next largest customer—Great Britain. For those products which will be allowed entrance under quotas, 60 per cent less will be received. In the capital goods category, allowed entrance only under rigid controls, about a third less will be admitted. On top of the lower volume will be the bureaucratic difficulties attendant on obtaining import licenses. A prospective Canadian buyer of U. S.-made road machinery, for example, will be forced to wait until a specific license can be obtained permitting purchase of a definite number of machines from a specific company. Furthermore, trade with Canada which has always been so easy that sales were often handled by domestic sales managers will become complicated enough to require the specialized knowledge of export managers.

Entire Industry Involved—Goods in the metals group destined for import control form a fairly complete list of the products of the entire American metalworking industry. Products under these restrictions, which will be made effective about the middle of this month by an order in council, are listed under Schedule III of Canadian Finance Minister Abbott's Bill No. 3. In this schedule where a Customs Tariff item is listed without being preceded by the prefix "ex" all goods included in the tariff item shall be deemed to be included in the schedule, and where a tariff item is listed and preceded by "ex" only the goods described thereafter are deemed to be included in the schedule. The words and expressions in this schedule have the same meaning as in the schedule to the Customs Tariff.

The following are items in the iron and steel and metals group which come under import control through Schedule III:

378—Bars and rods, of iron or steel; billets, of iron or steel, weighing less than 60 lb. per lineal yard; (a) Not further processed than hot rolled, n.o.p. (b) Not further processed than hammered or pressed, n.o.p. (c) Cold rolled, drawn, reeled, turned or ground, n.o.p. (d) Hot rolled, valued at not less than 4 cents per pound, n.o.p.

388—Iron or steel angles, beams, channels, columns, girders, joists, tees, zees and other shapes or sections, not punched, drilled or further manufactured than hot rolled, weighing not less than 35 lb. per lineal yard, n.o.p.; piling of iron or steel, not punched or drilled, weighing not less than 35 lb. per lineal yard, including interlocking sections, if any, used therewith, n.o.p.

388a—Iron or steel shapes or sections, as hereunder defined, not punched, drilled or further manufactured than hot rolled, weighing not less than 35 lb. per lineal yard, viz; I-beams, up to and including 6 in. in depth, but not to include H sections; channels, up to and including 7 in. in depth; angles, up to and including 6 in. by 6 in; zees, up to and including 6 in. in depth of web.

388b—Iron or steel angles, beams, channels, columns, girders, joists, tees, zees and other shapes or sections, not punched or drilled or further manufactured than hot rolled, n.o.p.; piling of iron or steel, not punched or drilled, including interlocking sections, if any, used therewith, n.o.p.

388c—Iron or steel beams or joists, not punched, drilled or further manufactured than hot rolled, weighing less than 5½ lb. per lineal yard for each inch in depth of web.

388d—Iron or steel angles, beams, channels, columns, girders, joists, piling, tees, zees, and

CANADA'S ATOMIC ENERGY PLANT: The $20 million atomic energy plant of Canada's National Research Council at Chalk River, Ont., is opening new vistas in physical, chemical and biological research. Scientists at the plant have produced radioactive isotopes, now are experimenting in phosphorous isotopes, important in agricultural research. Security of the project is evidenced by armed guards. NEA photo

other shapes or sections, punched, drilled, or further manufactured than hot rolled or cast, n.o.p.

388d—Iron or steel angles, beams, channels, columns, girders, joists, piling, tees, zees, and other shapes or sections, punched, drilled, or further manufactured than hot rolled or cast, n.o.p.

388e—Iron or steel side or center sill sections, of all sizes not manufactured in Canada, weighing not less than 35 lb. per lineal yard, not punched, drilled or further manufactured, when imported by manufacturers of railway cars, for use in their own factories.

393—Tires, of steel, in the rough, not drilled or machined in any manner, for railway vehicles, including locomotives and tenders.

ex 409l—Traction ditching machines (not being plows) and complete parts thereof for production use.

ex 409m—Internal combustion traction engines for other than farm purposes and complete parts thereof for production use.

ex 412—Machinery, being presses for use in the printing of newspapers, of not less value by retail than $1,500 each, of a class or kind not made in Canada; complete parts thereof for production use, not to include saws, knives, and motive power; mechanical deliveries or conveyors for use with newspaper printing presses.

ex 412a—Machinery and apparatus, n.o.p.; gun and mold apparatus for making press rollers; machines and apparatus for making electrotypes and stereotypes; engraving machines and apparatus, including photo-engraving apparatus, and other plate-making apparatus, used in the manufacture of printing plates of all kinds; machines and apparatus for graining metal plates; machines and apparatus for sensitizing, grinding or polishing metal plates; machines and apparatus including cameras and camera equipment, lens, prisms, camera and printing lamps, screens and vacuum frames for transferring by photographic processes, or direct, to plates or rolls for use in lithography, rotogravure and printing, shading apparatus; machines and apparatus for addressing and/or wrapping newspapers, magazines, periodicals, pamphlets and catalogues; machines and apparatus for embossing or stamping or producing embossed or engraved effects, book-binding, looping, stitching, sewing, gathering, inserting, bronzing, dusting, creasing, scoring, cutting, perforating, drilling, punching, slitting, rewinding, gluing, pasting, gumming, waxing, varnishing, carbon coating, patching, numbering, ruling, jogging, sheet piling, tying, bundling, tube-making, metal mounting, eyeletting, staying or stripping, reinforcing and box-covering; complete parts for production use, not to include saws, knives and motive power; all the foregoing when for use exclusively by, and in their capacities as printers, lithographers, bookbinders, manufacturers of stereotypes, electrotypes and printing plates or rolls, paper converts, or by manufacturers of articles made from paper or cardboard.

ex 412b—Flat bed cylinder printing presses, to print sheets of a size 25 by 38 in. or larger; complete parts thereof for production use; machines designed to fold or sheet-feed paper or cardboard; complete parts thereof for production use.

ex 412c—Typecasting and typesetting machines for use in printing offices; parts thereof for production use.

ex 412d—Offset presses; lithographic presses; printing presses and type-making accessories therefor, n.o.p.; complete parts of the foregoing for production use not to include saws, knives and motive power.

ex 413—Machinery and apparatus, of a class or kind not made in Canada, parts thereof for production use, specially constructed for preparing, manufacturing, testing or finishing yarns, cordage, and fabrics made from textile fibers or from paper, imported for use exclusively by manufacturers and scholastic or charitable institutions in such processes only.

ex 414—Complete parts of typewriters for production use.

ex 414a—Complete parts of dictating, transcribing and cylinder shaving machines for production use.

ex 414c—Bookkeeping, calculating and invoicing machines, and complete parts thereof for production use, and complete parts of adding machines for production use.

ex 415—Complete parts of electric and hand vacuum cleaners for production use.

ex 415b—Complete parts for washing machines, domestic, for production use.

ex 415c—Complete parts for domestic clothes wringers for production use.

ex 415d—Sewing machines, other than domestic, with or without motive power incorporated therein; complete parts of sewing machines for production use.

ex 420—Machinery of a class or kind not made in Canada, when imported by manufacturers of leather for use exclusively in the tanning of leather or the embossing of leather in their own factories, under regulations prescribed by the Minister, and complete parts thereof for production use.

ex 422—Street or road rollers and complete parts thereof for production use.

ex 422a—Concrete road-paving machines, self-propelling, end loading type, with a capacity of 21 cu. ft. of wet concrete or more; concrete and asphalt road finishing machines; form graders, subgraders; combination excavating and transporting scraper units; concrete mixers, transit type; dump wagons or trailers, having a capacity of 10 cu. yd. or over, not self-propelled; back-filling machines and equipment, mounted on self-propelling wheels or crawling traction, semi- or full-revolving boom and scraper type; steam or air-driven pile hammers or extractors; well-points; truck turntables; all the foregoing of a class or kind, not made in Canada; complete parts thereof for production use.

ex 422b—Trench and ditch excavating machines, round wheel or vertical ladder boom, chain and bucket type, for digging vertical or sloping bank ditches; complete parts thereof for production use.

ex 424—Fire engines and other fire extinguishing machines and chassis for same; complete parts of the foregoing for production use other than chassis parts.

ex 425—Lawn mowers designed for use with motive power, whether or not containing the power unit; complete parts thereof for production use.

ex 427a—All machinery composed wholly or in part of iron or steel, n.o.p., valued at over $200 per unit; complete parts thereof for production use.

ex 427b—All machinery composed wholly or in part of iron or steel, n.o.p., of a class or kind not made in Canada, valued at over $200 per unit; complete parts of the foregoing for production use.

427e—Automatic machines for making and packaging cigars and cigarets, not to include tobacco-preparing machines.

ex 427f—Machines for the manufacture of veneers and plywoods, viz.—veneer clippers, veneer clipper knife jointers, veneer glue spreaders, veneer jointers, veneer lathes and veneer taping machines; complete parts of all the foregoing for production uses.

ex 427h—Motion picture projectors for use with film one and one eighth of an inch in width or over, electric rectifiers or generators designed for use with such motion picture projectors; arc lamps for motion picture work, motion picture or theatrical spot lights, light effect machines; complete parts of all the foregoing for production use, not to include electric light bulbs, tubes or exciter lamps.

ex 428 — Traction engines, n.o.p.; complete parts thereof for production use.

ex 428c—Engines or boilers, n.o.p.; complete parts thereof for production use.

ex 428e—Diesel and semi-Diesel engines, n.o.p.; complete parts thereof for production use.

ex 428f—Air-cooled internal combustion engines of not greater than 1½ h.p. rating; complete parts thereof for production use.

434—Locomotives for use on railways, and chassis, tops, wheels and bodies for the same, n.o.p.

ex 434a—Motor rail cars or units for use on railways, and chassis for same; complete parts of the foregoing for production use.

434b—Steel wheels for use on railway rolling stock, viz; (i) pressed steel, (ii) n.o.p.

ex 435—Locomotive and motor cars for railways, of a class or kind not made in Canada, for use exclusively in mining, metallurgical or sawmill operations; complete parts thereof for production use; Diesel switching locomotives of a class or kind not made in Canada.

ex 438—Railway cars, n.o.p.; parts thereof for production use.

438a—Automobiles and motor vehicles of all kinds, n.o.p.; electric trackless trolley busses, chassis for all the foregoing.

438b — Bearings, clutch release; bearings, graphite; bearings, steel or bronze backed, with nonferrous metal lining; bushings, graphited or oil impregnated; ceramic insulator spark plug cores, not further manufactured than burned and glazed, printed or decorated or not, without fittings; compressors, air; commutator copper segments, commutator insulating end rings; tapered discs of hot rolled steel, with or without center hole, for disc wheels; distributor rotors and cam assemblies; door bumper shoes; electric wiring terminals, sockets, fittings, connectors and parts thereof, not to include battery terminals; gaskets of any material except cork or felt, composite or not; ignition contact points; keys for shafting; auxiliary driving control kits, designed for attachment to motor vehicles to facilitate their operation by physically disabled persons, and parts thereof; lenses of glass for head, tail, dome, signal and cowl or parking lamps, and for light reflectors; lock washers; piston ring castings in the rough, with or without gates and fins removed; rails of lock seam section, corners, locks and catches, unplated ventilators and parts thereof, the foregoing being of metal other than aluminum, for the manufacture of window sashes for bus bodies; steel bolts, or studs, capped with stainless steel, switches for lamps, heaters, and defrosters and parts thereof; vacuum control assemblies; vulcanized fibers in sheets, rods, strips and tubing; all of the foregoing when of a class or kind not made in Canada and for use in the manufacture or the repair of the goods enumerated in tariff items 424 and 438a, or for use in the manufacture of parts therefor.

438c—Ammeters; arm rests and wheel housing lining of indurated fiber, pressed to shape; axle housings, one piece welded, machined or not; carburetors and parts thereof; chassis frames and steel shapes for the manufacture thereof; cigar and cigaret lighters, whether in combination with a cigaret holder or not, including base, and parts thereof; control ventilator gear boxes, cylinder lock barrels, with or without sleeves and keys thereof; dash heat indicators and parts thereof; electric gear shift switches and parts thereof; engine speed governor units and parts thereof; fluid couplings, with or without drive plate assemblies, and parts thereof; front axle cross channel king pin support section assembly of steel, in the rough; fuel pumps, vacuum pumps and combinations thereof and parts therefor; gasoline gauges and parts thereof; hinges and parts thereof, finished or not, for bodies; horns and parts thereof; instrument bezel assemblies and parts thereof; instrument board lamps; locks, electric ignition, steering gear, transmission, or combinations of such locks, and parts thereof; moldings of metal with nails set in position, lead filled or not; oil filters and parts thereof; oil gauges and parts thereof; pipe

TO TALK TRADE

Arrival of Canada's Finance Minister, Douglas Abbott, in Washington last week, ostensibly for the purpose of completing arrangements for the $300 million loan by the Export-Import Bank, may forerun an early negotiation of a United States-Canadian trade treaty going beyond the Geneva tariff pacts. It is expected Canada will try to boost the level of its exports to the United States beyond that envisioned in the Geneva pacts.

In addition to urging such a trade agreement, Minister Abbott probably will inform the administration as to what his country can provide in the way of metals, lumber and foodstuffs for immediate shipment to Europe under the Marshall Plan.

lines of tubing, rigid or flexible, covered or not, with or without fittings, and tubing therefor, for oil, fuel, air, or liquid for actuating hydraulic brakes; purifiers for air, and parts thereof; purifiers for oil or gasoline, parts thereof and brackets and fittings therefor, radiator, hood and other grills, assembled or not, and parts thereof, but not polished nor plates, and not to include finish or decorative molding; radiator ornaments, and hood lift lock ornaments, unplated, and parts thereof; radiator shutter assemblies, automatic; radiator water gauges; radiator shells and parts thereof, not plates nor metal finished in any degree; shackles, bearing spring, and parts thereof; speedometers and parts thereof; spring covers of metal and closing strips or shapes therefor; stampings, body, cowl, hood, fender and instrument board, or metal in the rough, trimmed or not, but not metal finished in any degree; starter switch assembly and parts thereof; steering wheels, rims and spiders therefor; sun visor blanks of gypsum weatherboard; thermostat and parts thereof; throttle, spark and choke assemblies, including buttons therefor, and parts thereof; tire clamping rings of steel, plated or not; universal joint ball assemblies; voltage control regulators; windshield wipers and parts thereof; all of the foregoing when of a class not made in Canada and for use in the manufacture or the repair of the goods enumerated in tariff items 424 and 438a or for use in the manufacture of parts therefor.

438d—Front and rear axles; brakes, clutches; internal combustion engines; steering gears; magnetos; rims for pneumatic tires larger than 30 in. by 5 in.; transmission assemblies; hydraulic or fluid couplings and torque convertors; drive shafts; universal joints; steel road wheels; and parts of the foregoing, when of a class or kind not made in Canada, and imported by manufacturers of the goods enumerated in tariff items 424 and 438a for use only in the manufacture of motor trucks, motor busses and electric trackless trolley busses, or for the manufacture of chassis for the same.

438e—Parts, n.o.p. for automobiles, motor vehicles, electric trackless trolley busses or chassis enumerated in tariff items 438a and 424, not to include wireless receiving sets, die castings of zinc, electric storage batteries, parts of wood, tires and tubes or parts of which the component material of chief value is rubber: (1) Brake linings, and clutch facings whether or not including metallic wires or threads: (a) when made from crude asbestos of Empire origin (b) when made from crude asbestos of non-Empire origin; (2) Automobile and motor vehicle engines, stripped, n.o.p. and complete parts thereof, n.o.p.; (3) Parts, n.o.p. not electroplated, whether finished or not.

438f—Hot rolled strip of iron or steel with rolled or mill edge, of a class or kind not made in Canada, when imported for use in the importer's own factory, in the manufacture of the goods enumerated in tariff items 424 and 438a, or in the manufacture of parts therefor.

ex 438g—Motor cycles or side cars therefor; complete parts of the foregoing for production use.

438h—Annular ball bearings and parts thereof, when imported for use only as original equipment in the manufacture of goods enumerated in tariff items 438a and 424, under regulations prescribed by the Minister.

438i—Body bottom cross members and steel shapes for the manufacture thereof; bumpers, front and rear, and parts thereof, including spring steel bumper plates; casket tables or platforms for hearses; destination and route sign assemblies, illuminated or not, and parts thereof; direction signals, illuminated or not; door and step mechanism, hand, vacuum or air operated, and parts thereof; door locks and catches and parts thereof; electric switches, buzzers, bells, push buttons, fuse assemblies and parts thereof; forward drive control conversion assemblies and parts thereof; lamps of all kinds, illuminating and indicating, including sockets, flanges, terminals, glassware, lenses and gaskets therefor, assembled or not, but not to include lamp bulbs; metal stampings, oiled and primed or not, and assemblies thereof; rubber fenders; seat operating mechanisms, ventilators, including motor driven fan type, and grills, and parts thereof; and window operating mechanisms; all of the foregoing when imported to be used only in the manufacture of motor truck bodies, motor bus bodies, electric trackless trolley bus bodies, motor ambulances and hearses.

438j—Piston castings of any material, in the rough or semifinished.

ex 439b—Cars, n.o.p. trucks, road or railway scrapers.

ex 440, ex 440a—Vessels, dredges, scows, yachts, boats and other water-borne craft, built outside of Canada, of any material, destined for use or service in Canadian waters, except pleasure boats of all kinds.

ex 440l—Aircraft, n.o.p.; complete parts thereof for production use, not including engines, under regulations prescribed by the Minister.

440m ex—(i) Unfinished parts of aircraft, n.o.p., for production use, not including parts for production of aircraft engines. (ii) Direct or inertia starters with or without related operating gear and parts thereof; generators; voltage control boxes; batteries; de-icing and anti-icing equipment and parts thereof, not including parts of rubber; vacuum pumps with related operating gear and parts thereof; landing and navigation lights; propellers; hydraulic jacks and pumps and parts thereof; aircraft wheels; aircraft brakes with related operating gear; aircraft tires and tubes; oil coolers; fuel pressure warning devices; exhaust gas analyzers; pressure fire extinguishers; primer pumps; instruments excepting fuel contents gauges; bolts, nuts, cocks, turnbuckles, clevis and pins, swaged wires and tie rods; bars, tubes, extrusions and forgings of aluminum, aluminum alloys and magnesium alloys; steel tubing; all of the foregoing when of types and sizes not made in Canada and imported by manufacturers of aircraft for use exclusively in the manufacture in their own factories of the goods enumerated in tariff item 440l, under such regulations as the Minister may prescribe.

440n—Engines, when imported for use only in the equipment of aircraft.

440o ex—(ii) Parts, finished or not, n.o.p., for the production of aircraft engines.

ex 440p—Direct or inertia starters with or without related operating gear and parts thereof; generators; voltage control boxes; batteries; de-icing and anti-icing equipment and parts thereof, not including parts of rubber; vacuum pumps with related operating gear and parts thereof; landing and navigation lights, propellers; hydraulic jacks and pumps and parts thereof; aircraft wheels; aircraft brakes with related operating gear and parts thereof, aircraft tires and tubes; oil coolers; fuel pressure warning devices; exhaust gas analyzers; pressure fire extinguishers; primer pumps; instruments excepting fuel contents gauges; bolts, nuts, cocks, turnbuckles, clevis and pins, swaged wires and tie rods, bars, tubes, extrusions and forgings of aluminum, aluminum alloys and magnesium alloys; steel tubing; all the foregoing when of types and sizes not made in Canada and imported for use exclusively in the manufacture of the goods enumerated in tariff item 4401 under such regulations as the Minister may prescribe.

ex 422d—Materials, including all parts, wholly or in chief part of metal, of a class or kind not made in Canada, when imported by manufacturers of goods entitled to entry under tariff items 410g, 410l, 410n, 410o, 410p, 410q, 410u, 410w, 410z, 411, 411a, 411b, 428c, 428e and 447a, for use in the manufacture of such goods in their own factories, under such regulations as the Minister may prescribe.

ex 443—Parts for the production of apparatus designed for cooking or for heating buildings; (1) For coal or wood (2) For gas (3) For electricity (4) For oil (5) n.o.p.

ex 443a—Ovens, of a class or kind not made in Canada, for use in commercial bakeries; complete parts of the foregoing, for production use.

ex 445—Complete parts of electric light fixtures and appliances, n.o.p., for production use.

ex 445d—Complete parts of electric wireless or radio apparatus, n.o.p., for production use.

ex 445f—Electric dynamos or generators and transformers, n.o.p.; complete parts thereof for production use.

ex 445g — Electric motors, n.o.p.; complete parts thereof for production use.

ex 445i—Complete parts for the production of electric sad irons.

ex 445j—Parts for the production of electric dry shaving machines for use in removing human hair.

ex 445k—Electric apparatus, n.o.p., complete parts for production use, of a total invoice value exceeding $25.

New Export Policy Effected

Department of Commerce will grant export licenses on price basis in move to broaden export competition and encourage private enterprise. Steel is included

UNDER a new export license policy, effective Jan. 2, 1948, the Department of Commerce, through its Office of International Trade, will grant export licenses on the basis of the lowest price for comparable merchandise and similar conditions of supply for most controlled commodities, including all steel products, coal and coke, certain wood products, all food and agricultural supply commodities and all chemicals and drugs except streptomycin.

"This," the announcement stated, "will permit wider competition in the export trade and will aid importing nations in conserving scarce dollar exchange. In the past, export licenses have been issued to exporters largely on the basis of their prewar historical participation in the trade.

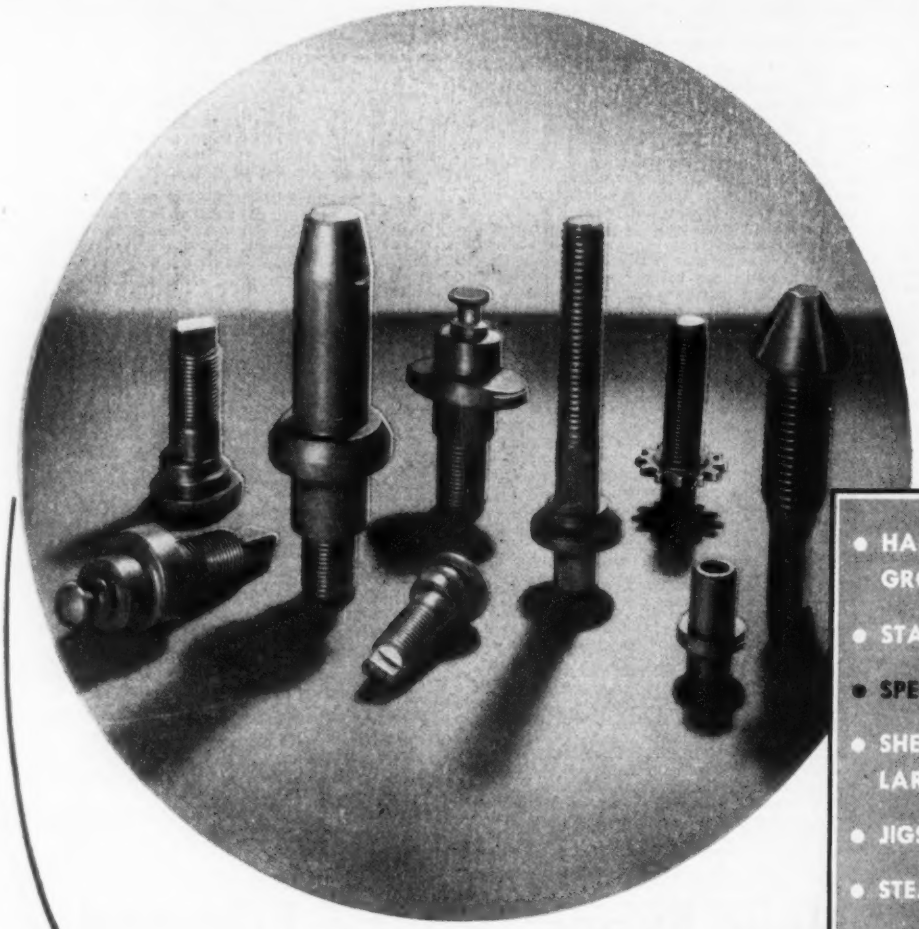
Private Trade Favored—In applying the new license formula, OIT will seek to favor maintenance of private trade channels over procurement and exports by foreign government missions in the United States.

Needs and end uses abroad will remain the principal criteria in licensing. When license applications exceed the available quota, approved applications will be distributed among applicants in accordance with the competitive criteria.

Exporters will be required to submit with their applications evidenee of accepted firm orders for merchandise. This information must include specifications and prices.

Foreign Missions Limited—Foreign purchasing missions now established here may continue limited procurement activities.

In the first quarter of this year only steel products, coal and coke, wood products, food and agricultural supply commodities and all chemicals and drugs except streptomycin will be subject to the new regulations. Eventually all commodities will come under this modified policy. In order to obtain consideration for first quarter quotas, all export license applications for the above named products should be filed on or before Jan. 23.



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ALLIED CORPORATION PRODUCTS — PRECISION · EXPERIENCE · DEPENDABILITY

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Castings displacing sheet and strip steel as No. 1 short material in automotive plants. Attention turns to making synthetic scrap in foundry cupolas and aluminum

DETROIT

FLAT-ROLLED steel is relinquishing the spotlight as the No. 1 short material in automobile manufacturing. Its doubtful pre-eminence is being taken over by iron castings, and many around Detroit feel that unless some miracle happens automobile production this year will be restricted seriously by inability to obtain a sufficient supply of motor blocks, transmission cases, flywheels and the numerous other parts conventionally produced in gray iron. Most recent government figures indicate the average passenger car required 690 pounds gross of gray iron and 76 pounds of malleable, while the average medium truck demands 612 pounds of gray iron and 322 pounds of malleable.

The trouble springs from a virtual drying up of the supply of cast iron scrap for foundry cupolas, plus a continuing extreme tightness in available merchant pig iron. Instances are heard of cast scrap bringing bids as high as $80 a ton from frantic foundries, while the going market quotation on the material is around $60 a ton. Against a price of something under $40 a ton for pig iron, these figures are of course fantastic, demonstrating again what happens to price in the face of high-pressure competition for material in short supply.

At this point it might be mentioned the above $80 price was the outgrowth of an amusing chain of circumstances. One of the automotive plants in this area, operating its own gray iron foundry, was direly in need of cast scrap and, pondering the emergency, some bright gentleman came up with the idea that if cast scrap accumulations in the shops of the company's several thousand dealers could be accumulated, they would put the foundry in the clear. He further reasoned that dealers might be persuaded to round up such old motor blocks, cylinder heads and the like if they were to be allocated an extra new car for every, say, ton of scrap shipped back to the factory.

At first glance the proposal was a beauty and it was placed in effect, without reckoning on the ingenuity of some dealers who went out and bought a carload or more of scrap from their local scrap yard and paid $80 a ton for it, hoping to get, for example, 50 new cars in exchange for 50 tons of scrap. They cared little about what the scrap cost, since they made a profit of $500 or more on every car sold anyway.

Obviously the scheme quickly blew up in the factory's face, since it could not allocate sufficient additional new cars to cover the scrap received.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

	1947	1946
January	366,205	109,910
February	393,636	101,637
March	443,588	134,071
April	445,137	229,867
May	404,191	263,445
June	421,466	217,943
July	400,944	315,963
August	364,478	358,457
September	444,501	339,774
October	461,536	406,561
November	418,368	389,645
December	483,639*	393,223
12 mos.	5,047,689*	3,260,496

* Preliminary.

Estimates for week ended:

Dec. 20	120,657	96,754
Dec. 27	75,638	67,070
	1948	1947
Jan. 3	74,092	53,437
Jan. 10	105,000	64,828

Estimates by Ward's Automotive Reports

What to do about these hard-to-get metallics? One policy might be to wait the situation out, to limit production to the availability of scrap and pig iron in the hope that something will break before too long. That is not the usual automotive technique.

Look to Aluminum—Another plan is to look for substitutes, or in other words aluminum. This is being done assiduously by several companies, although production and cost hurdles have yet to be cleared. Some believe a few switches may be in the offing before too long.

A third and more immediately helpful idea is to produce "synthetic" scrap in foundry cupolas. The stunt is not new but right now is most timely. It involves the collection of every idle hunk of iron or steel reposing in manufacturing plant and yard, dumping them into the cupola at the end of a heat, along with perhaps 10 per cent coke, a little ferrosilicon and some silvery pig.

Anything that may be suspected of having ferrous metallic content is suitable, and around the average automobile plant there is a lot of this material.

With cast scrap at $60-$80 a ton, every pound that can be salvaged and melted is just so much gravy. An experienced foundryman here says that years ago he saved his company an estimated $100,000 in its scrap bill by scouring the plant for iron and melting it into synthetic scrap. He recommends the expedient highly in today's perilous situation, and his advice is being taken by at least one foundry in the Detroit area.

Ford Outlook Bright

The Ford picture, as outlined by Henry Ford II and his executive vice president, E. R. Breech, is brightly tinted. Production of well over the million units built last year is contemplated. Expenditure of better than $80 million has been made in tooling the brand new Lincoln, Mercury and Ford lines, and expansion of facilities is proceeding at a rate of about $100 million a year. A minimum changeover period is expected this spring, although some guarded estimates have placed it as long as 30 days. The new Mound Road stamping, gear and axle plant is rapidly being whipped into production, and limited production has been started at a new Canton, O., forging plant which is being described as a new high in the mass production of automotive forgings. It will involve such innovations as the hot pressing of wheel spindles at exceptional speed and with exceptional physical properties, installing of 19 salt bath furnaces for the isothermal annealing of forgings as they come from hammer and numerous other advanced techniques on which Ford process engineers and research experts have been concentrating for months. Administrative and purchasing personnel have been transferred from the Rouge plant to the Ohio Division, as is the case with the gear and axle setup in Detroit.

At the Mound Road plant more than $200 million worth of government-

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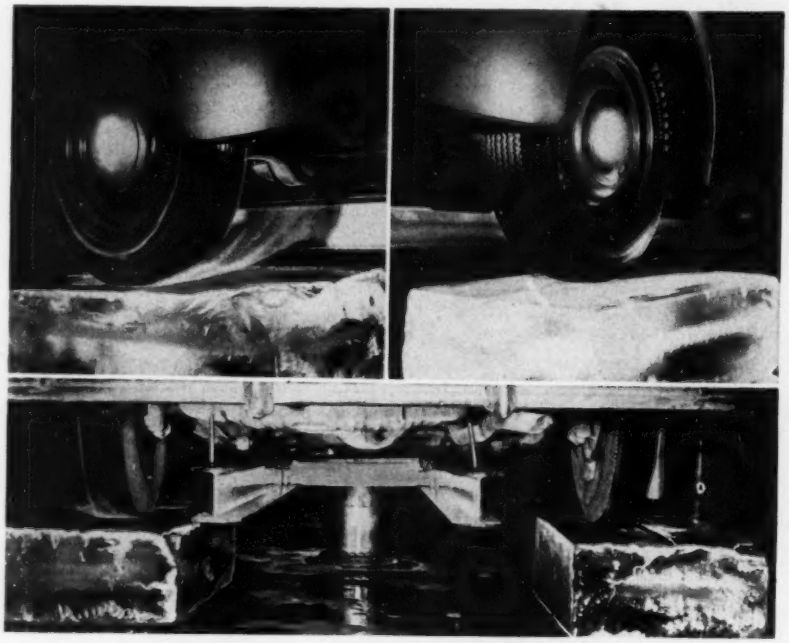

WINTER TIRE: Nonskid characteristics of the new Firestone Polar Grip Tread are demonstrated on ice cakes. New tire, right, grips the slippery surface firmly, while conventional tread, left, spins. New tread includes thousands of tiny suction cups. NEA photo

owned equipment and ordnance materials have been removed and a good start made on production of miscellaneous parts for 1948 model cars and trucks. Items scheduled for manufacture there include drive-shafts, rear axle and transmission components, front suspension parts and various heavy stampings. Assembly line techniques were employed in removing equipment and materials from the building, with the result the job was completed five weeks ahead of schedule.

Chrysler Spurt Surprising

Year-end spurt of assembly line at all four Chrysler Corp. Divisions surprised most observers and seemed to indicate the corporation either had been stocking some steel or had located additional supplies of sheet and strip. Inasmuch as the stocking of sufficient steel to permit running 9-hour shifts and Saturday operations, is hardly credible in view of the repeated complaint of industry leaders over the lack of enough steel to guarantee normal operations, the inference is drawn that Chrysler must have located additional tonnage to step up its assembly pace. One report is to the effect the last-minute drive was inspired by the effort to push car and truck assemblies for the year past the million mark. If so, the push was successful, for Chrysler claims it shipped about 1,006,000 units from U. S. and Canadian assembly plants, exceeding by some 80,000 earlier estimates of the probable year's record. It is believed Chrysler may have even edged out Ford for the year, which barely cleared a million in cars and trucks.

K. T. Keller, Chrysler president, in one of his infrequent press statements, has stated his company plans no changes in present models through most of this year. This suggests the considerable volume of Chrysler tool and die work now released will be for completely restyled models to appear in the late fall.

One change which Chrysler has effected through its entire line is in tire and wheels, all models now carrying the new low-pressure and larger tire. This was no trifling revision, involving wider rims on smaller wheels, as well as design changes in the steering mechanism and fenders because of the extra width of the new tires.

Willys Expects Big Increase

James D. Mooney, president of Willys-Overland, is startlingly more optimistic in his size-up of production prospects. His company built 119,733 units last year for the highest peacetime record since 1929, and is projecting a 99 per cent increase to 238,000 vehicles for this year. Schedules have been drawn up to increase daily output from 600 vehicles of all types this month to a planned 1150 daily in October. Employment currently is 7800 and will be boosted to 12,000 by May. Mr. Mooney admits success of this auspicious planning depends mainly on the availability of steel and other critical materials, plus manpower, although Willys' position in these matters is much more favorable than in the past. A probable bottleneck he did not mention is in castings which are supplied by Wilson Foundry & Machine Co., a subsidiary in Pontiac, Mich. Everything is not entirely rosy there.

K-F Sights 1500 Daily

Everybody's happy out at the Willow Run assembly lines of Kaiser-Frazer which resumed last week after a holiday shutdown. Three times before the brief interruption daily production exceeded 1000, and the year's total grazed 145,000. Buying currently is on the basis of 1000 cars a day, although sights are being set on 1500 some time later this year, and output of 300,000 for the year. The company has repaid in full the $12 million credit received from the Bank of America. A balance of nearly $11 million was paid in advance of the due date and K-F closed the year with a cash balance of a reported $18 million, and all trade accounts on a current basis.

Approval has been given to expenditure of $250,000 for remodeling of the K-F foundry at Dowagiac, Mich. New equipment and changes in the plant layout are aimed at giving better means for controlling quality, improving materals handling and working conditions. Among changes planned are the dismantling of the so-called "old foundry" part of the plant, transfer of the shipping department to a new location and rehabilitation of old core rooms. A transportation and cooling chain conveyor will be installed between the foundry and the cleaning and grinding departments. Two new sand mullers are on order to replace obsolescent equipment now in use, while a new vertical core oven will replace the present stationary type. Other additions will include laboratory facilities and eight new molding machines.

New Pontiacs in Production

The 1948 line of Pontiac cars is now in production and will be previewed by the press on Jan. 19. Beyond the usual decorative and styling changes, principal interest centers on the hydra-matic transmission, offered for the first time by Pontiac as optional equipment. Intensive training has been given service personnel.

Resistance Welding speeds automobile production . . .

cuts production costs

COST-CONSCIOUS automobile and body manufacturers continue to specify resistance welding for a major share of their fastening. And FEDERAL WELDERS continue to be first choice in the automotive industry because of *proven performance.*

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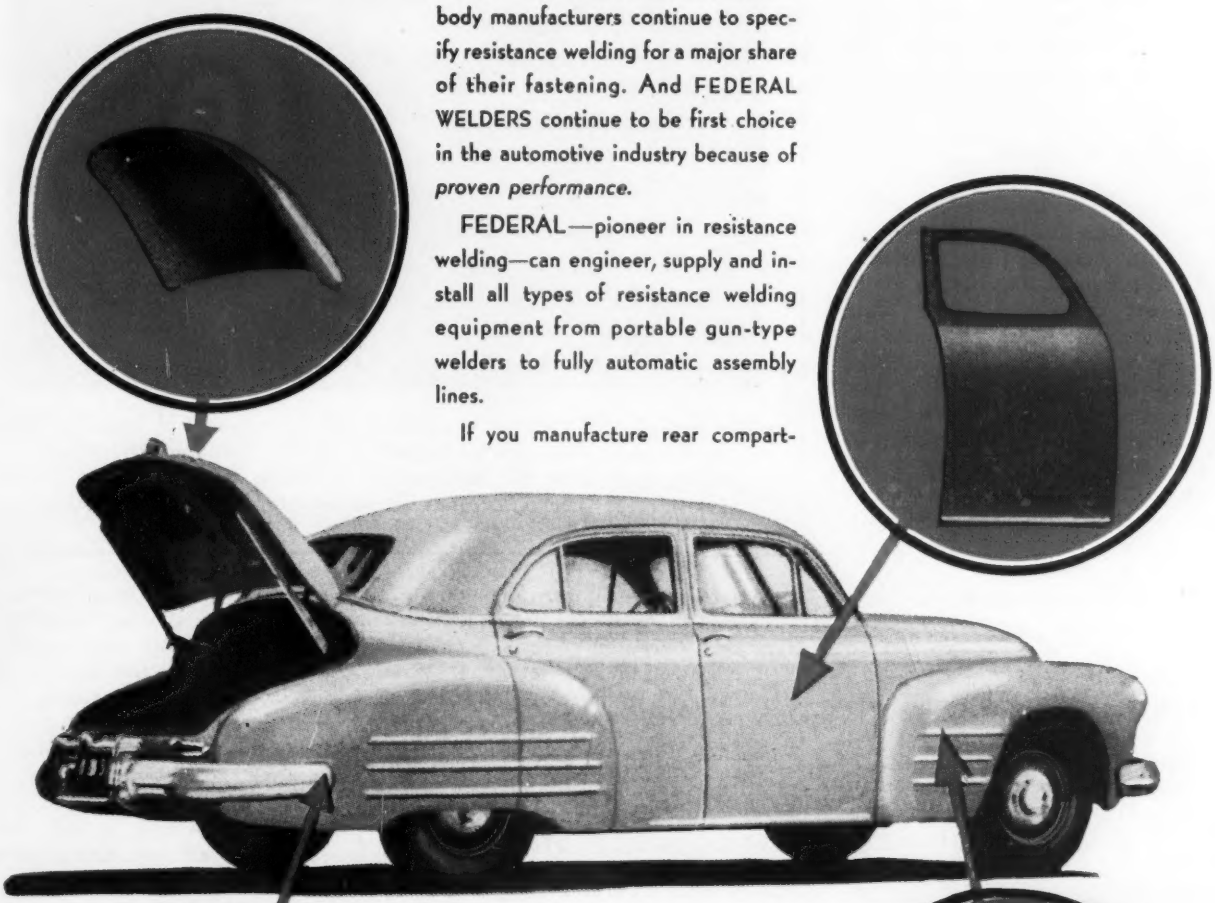
If you manufacture rear compartment panels, doors, fender or axle housing assemblies, etc., it will pay you to consult FEDERAL. Address inquiries to The Federal Machine and Welder Company.



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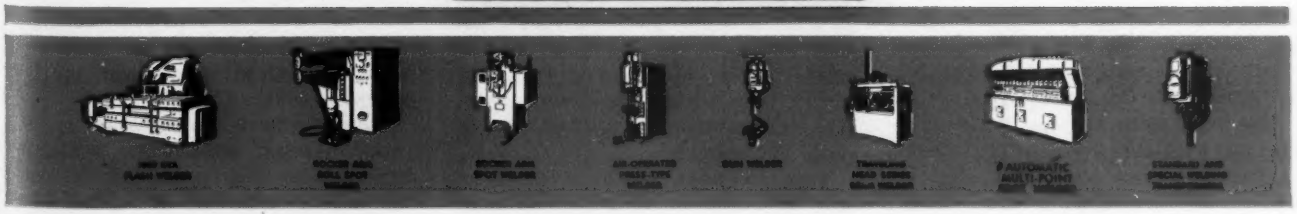


Tool Company Has Century in Metalworking

WHITMAN & BARNES, Detroit, division of United Drill & Tool Corp., is this year celebrating its 100th anniversary, a century in industry marked by a trend toward greater concentration on one class of products, tools for the cutting, drilling and piercing of metals.

The division today is known primarily as a manufacturer of twist drills, but this line was not begun until 1891. Among the products which Whitman & Barnes has made in the past are mower knives, lawn mowers, edge tools, chisels, ice tongs, wrenches, cotter pins and even rubber horse shoes. At the start of the century the company was a large producer of forgings, but in 1920 the forging division was sold to J. H. Williams Co., Buffalo. Products unrelated to the cutting tool field have been similarly dropped or the rights sold over the years.

Started with Farm Tools—The history of Whitman & Barnes dates back to 1848 when at Fitchburg, Mass., Albert Page set up a business to manufacture knives and other cutting tools for the growing agricultural industry. Six years later he was joined by Augustus Whitman to form a partnership of Page, Whitman & Co., which later became known as Whitman & Miles Mfg. Co. In 1877 this organization merged with George Barnes & Co., Syracuse, N. Y. This became Whitman & Barnes Mfg. Co.

In 1926 the company, which had moved to Akron, consolidated with Detroit Twist Drill Co. to form Whitman Barnes-Detroit Corp. All manufacturing facilities were moved to Detroit which still is the firm's home office and chief manufacturing site. In 1929 the name was changed to Whitman & Barnes Inc. and in 1936 a final change occurred to the present United Drill & Tool Corp.

Operates Three Divisions — Today United Drill & Tool operates three divisions, Whitman & Barnes in Detroit, Valley Forge Steel & Tool Division in Chicago and Chicago-Latrobe Twist Drill Works in Chicago. The latter division was formed as the result of the company's purchase of Latrobe Tool Co. in 1933.

The firm plans to start its second century with a new home. It is now preparing a new plant and office a short distance east of Plymouth, Mich.

CELEBRATES 55th BIRTHDAY: Carl I. Collins, president of Superior Steel Corp., Carnegie, Pa., greets Miss Betty Brandon, Carnegie school teacher, who was the first of the 5650 visitors attending Superior's open house, held recently in observance of the company's 55th anniversary

Officers of the company include M. J. Kearins, president; Konstantin Kornwall, executive vice president; H. J. Cogswell, W. B. Fetner, E. W. Zipse, C. W. Kreuger, A. E. Goldthwaithe, vice presidents; Herbert Beckstrom, treasurer; and H. G. Capron, secretary.

Gives Division Status to Southern Ferro Alloys Co.

Tennessee Products & Chemical Corp., Nashville, Tenn., maker of coal tar and wood distillations products, is now operating the plant of its Southern Ferro Alloys Co. in Chattanooga as Southern Ferro Alloys Division.

John Kruesi will continue as manager of the division, and there will be no change in personnel. Tennessee Products acquired Southern Ferro Alloys last May.

Sharon Buys Coke Plant At Fairmont, W. Va.

Sharon Steel Corp., Sharon, Pa., has bought the Fairmont, W. Va., byproduct coke plant of Domestic Coke Corp., a subsidiary of Standard Oil Co. of New Jersey, President Henry A. Roemer has announced. The deal involves 15 million tons of coal, yet unmined.

This purchase, for an undisclosed sum estimated at between $4 and $5 million, is expected to enable Sharon to boost its iron and steel output and relieve its coke shortage problems.

The company this month will formally take over at the 65-oven plant which is capable of producing 25,000 tons of coke monthly. This coke, plus that from Carpentertown Coal & Coke Co., Carpentertown, Pa., now owned by Sharon, is of good metallurgical quality and is expected to meet nearly all the firm's present coke needs.

Sharon has been in a precarious position for coke supply. It took over a government-owned coke plant at Morgantown, W. Va., under a five-year lease when it bought the Carnegie-Illinois Steel Corp.'s Farrell works two years ago, but the government then appropriated the coke from that Morgantown plant for making fertilizer for Europe.

Washington Steel Corp. Closes Sales Offices

Washington Steel Corp., Washington, Pa., permanently closed all its sales offices in Chicago, Detroit, Philadelphia and New York on Jan. 1. This action is interpreted as an economy move whereby the company will now concentrate its sales efforts through distributor outlets.

John Richards, formerly assistant sales manager of Eastern Stainless Steel Corp., Baltimore, will be the company's manager of distributor sales.

Briefs . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Amalgamated Steel Corp., Cleveland, producer of tool, die and other special steels, will break ground soon for an addition to its warehouse at Broadway, Wire and Skyrm Aves., Cleveland. Cost will be approximately $125,000.

—o—

Detroit Steel Products Co., Detroit, has purchased Strand Building Products Co., Detroit, maker of steel garage doors. The Strand name, personnel and marketing organization will be retained. Offices remain at 1710 Buhl Bldg.

—o—

Eastern Carbide Corp., supplier of a complete line of carbide items, has been formed by Anthony J. Allen and Walter A. Ruppel at 909 Main St., New Rochelle, N. Y.

—o—

Diamond Steel Co. Inc., warehousing firm, reports that its offices are now located at its warehouse No. 3, 2839 N. Natoma Ave., Chicago.

—o—

Department of Commerce, Office of Domestic Commerce, reports that a series of State bulletins are now available which reveal definitive county-by-county figures on employment, payrolls and business population.

—o—

Pullman-Standard Car Mfg. Co., Chicago, built more than 16,000 domestic freight cars of all types in 1947, compared with 8382 such cars delivered in 1946.

—o—

Continental Motors Corp., Muskegon, Mich., has added a new six-cylinder engine to its line and states that two airplane manufacturers will use it in four-place models scheduled for early public showing. It is the ninth of the company's horizontally-opposed, aircraft engine models.

—o—

Ziv Steel & Wire Co., Chicago, has opened a branch in Toledo, O., at 1819 Starr Ave. William P. Stead is manager of the facility which will stock all types of tool and die steels.

—o—

Keystone Bolt & Nut Corp., New York, maker of fastening devices, recently celebrated its 25th anniversary by occupying a new building at 125 Church St.

—o—

Alien Property Office, Department of Justice, will make available to American industry generally over 6000 patents now held by 25 corporations in which the government has seized a controlling stock interest under the Trading with the Enemy Act.

—o—

Rapids-Standard Co. Inc., Grand Rapids, Mich., has moved its sales and advertising departments to Rapistan Bldg., Grand Rapids.

—o—

Reynolds Metals Co., Richmond, Va., has appointed Levinson Steel Sales Co., Pittsburgh, as warehouser and distributor for Reynolds' Aluminum Sales Division in the Pittsburgh area.

—o—

Wheatland Tube Co., Philadelphia, manufacturer of steel pipe and tubing, has organized Maneely Chemical Co. as an affiliate unit to dispose scientifically of Wheatland's waste materials. Plant construction at Wheatland, Pa., will begin this month, and production of zinc sulphate, zinc chloride, zinc ammonium chloride and pigment grade iron oxide is scheduled for the latter part of this year.

—o—

Sylvania Electric Products Inc., New York, reports that its subsidiary, Colonial Radio Corp., will suspend assembly of radio chassis at its Bloomington, Ill., and Riverside, Calif., plants. In the future they will be assembled at Colonial's Buffalo plant where capacity is being doubled.

—o—

Steel Distributors Ltd., warehousing firm, has moved its offices and warehouse to 500 Cherry St., Toronto, Ont., Canada.

—o—

Westinghouse Electric Corp., Pittsburgh, will soon transfer the section of the small motor manufacturing operations temporarily located at Fairmont, W. Va., to Bellefontaine, O., to clear the way for expansion of fluorescent lamp manufacturing facilities in Fairmont. The new Bellefontaine plant is located 35 miles from the Small Motor Division headquarters plant at Lima, O.

—o—

Electric Auto-Lite Co., Toledo, O., has purchased a portion of the Wright Aeronautical Corp. plant in Lockland, O., for $8,400,000. Firm plans to use the facility to produce headlights and other automotive parts now made in several scattered plants.

—o—

Lake Erie Engineering Corp., Buffalo, maker of general hydraulic presses, announces a change of its sales representatives for Michigan and Ohio. Area will now be handled by Rieder Thoreson and Fred McGosh, 1115 Book Bldg., Detroit.

—o—

John S. Barnes Corp., Rockford, Ill., manufacturer of hydraulic structures, controls and fluid power units, has appointed B. W. Rogers Co., Akron, as its sales representative for northern Ohio.

—o—

Hewitt-Robins Inc., New York, has organized a new division, Robins Engineers Division, to take over the responsibility of handling the contracting phases of materials handling and processing business of the company.

—o—

ACF-Brill Motors Co., Philadelphia, has dissolved its wholly-owned subsidiary, Hall-Scott Motor Car Co., and has incorporated its operations into a new division of the parent firm to be known as Hall-Scott Motor Division.

—o—

Borg-Warner International Corp., Chicago, will direct exports for Asbestos Mfg. Co., Huntington, Ind., maker of brake lining, clutch facings, fan belts and rubber goods and hose.

—o—

Syncro Machine Co., Perth Amboy, N. J., announces formation of an affiliated company, Winget-Syncro, Rochester, Kent, England, which will sell the Syncro line of wire drawing equipment. The sales company is also associated with Winget Ltd., Rochester, England, which manufactures Syncro machines in Britain.

—o—

Air Reduction Co., New York, maker of oxygen, acetylene and welding equipment and supplies, has formed a new, wholly-owned subsidiary, Air Reduction Pacific Co., to handle the parent firm's West Coast sales. H. P. Etter, formerly sales manager of the Pacific Coast Division, will be president of the subsidiary.

—o—

Bailey Meter Co., Cleveland, manufacturer of measuring and controlling equipment, has opened branch offices at 2176 Esplanade Ave., New Orleans, and 207 State St., Schenectady, N. Y. S. G. Dukelow is manager at New Orleans, and J. F. Luhrs is the Schenectady manager.

—o—

Kulka Steel & Equipment Co., Alliance, O., has purchased Alliance Engineering Co., also of Alliance. L. P. Kulka, president of the purchasing firm, said that efforts would be made to provide a new industry in the Alliance Engineering plant which has been manufacturing traction devices, snow scoots and cultivators.

The Business Trend

HOLIDAY shutdowns plus extremely inclement weather over widespread areas brought to a temporary halt the high rate of industrial activity which had culminated in a new postwar peak. During the Christmas week production in the basic industries dropped sharply, but an immediate partial recovery in most phases of industry and trade was evidenced in STEEL's index of industrial production which for the week ended Jan. 3 rose 9 points to reach 150 per cent (preliminary) of the 1936-1939 weekly average.

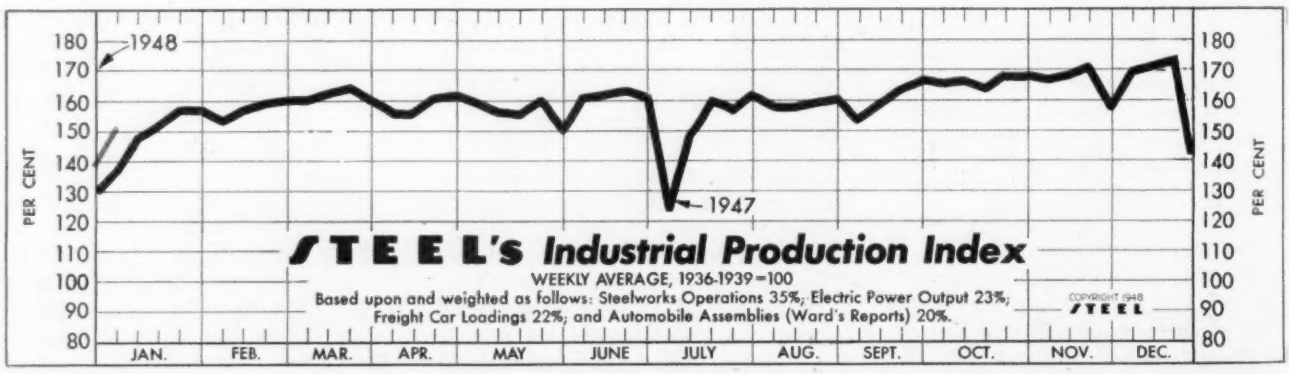
OUTPUT—Industrial operations during November advanced to a new postwar record, according to the Federal Reserve Board's seasonally adjusted index. At 192 per cent of the 1935-1936 average, this index was 2 points higher than in October. Output of durable goods expanded further, reflecting higher levels of activity in most machinery, transportation equipment and nonferrous metals fabricating industries. Manufacture of nondurables likewise increased during the month as did the production of minerals, particularly bituminous coal as increased number of freight cars became available.

CARLOADINGS—American freight car loadings during 1947 were highest since 1930, Association of American Railroads announces. With 44,503,349 cars loaded, or only 3 per cent less than in 1930, the railroads actually handled 68 per cent more freight, measured in ton-miles, than in that year in spite of a decline in the supply of cars of approximately one-half million units since that time. The year's ton-mileage was in fact almost 10 per cent higher than in the previous peacetime peak year, 1946, and was 45 per cent greater than in the prewar peak year of 1929.

EMPLOYMENT—With 43,450,000 people working in nonagricultural establishments in mid-November a new high in such employment was reached, Bureau of Labor Statistics reports. The new level of nonfarm employment was one million over that for November, 1946, with more than half of the increase having taken place in manufacturing industries. A peacetime record of 15,851,000 people were employed by manufacturing concerns.

EARNINGS—Small increases in manufacturing earnings were estimated for November by the Bureau of Labor Statistics, even though the average work-week shortened slightly. Hourly earnings in the durable and nondurable goods industries advanced 0.4 and 1.1 cents, respectively, bringing weekly earnings to $54.70 and $47.19.

OUTLOOK—Further gains in sales volume, largely as the result of higher prices, and continued high levels of demand during the first half of 1948 are predicted by the great majority of companies surveyed by the National Industrial Conference Board on the business outlook. In a number of industries no possible gains are seen "since nearly all available capacity has been fully utilized for some time," while in others raw materials shortages (particularly steel) prevent increased activity. In a small segment of industry, demand does not warrant increased output.



The Index (chart above): Week Ended Jan. 3 (preliminary) 150 Previous Week 141 Month Ago 169 Year Ago 137

BAROMETERS of BUSINESS

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)†	97.0	86.0	96.5	88.5
Electric Power Distributed (million kilowatt hours)	4,868	4,830	5,009	4,574
Bituminous Coal Production (daily av.—1000 tons)	1,389	2,200	2,106	1,585
Petroleum Production (daily av.—1000 bbl.)	5,291	5,285	5,274	4,649
Construction Volume (ENR—Unit $1,000,000)	$54.4	$63.6	$82.2	$61.9
Automobile and Truck Output (Ward's—number units)	74,092	75,638	107,240	53,437

* Dates on request. † 1947-48 weekly capacity is 1,749,928 net tons. 1946 weekly capacity was 1,762,381 net tons.

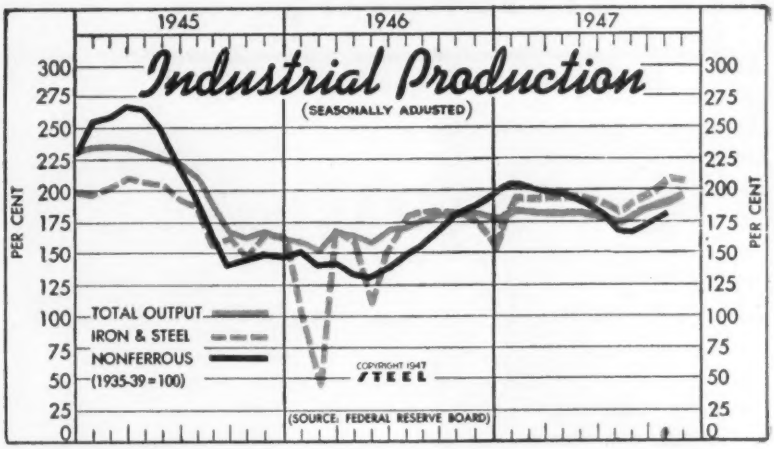
TRADE				
Freight Carloadings (unit—1000 cars)	660†	599	941	687
Business Failures (Dun & Bradstreet, number)	58	38	60	30
Money in Circulation (in millions of dollars)‡	$28,971	$29,111	$28,519	$28,951
Department Store Sales (change from like wk. a yr. ago)‡	+27%	+8%	+7%	+77%

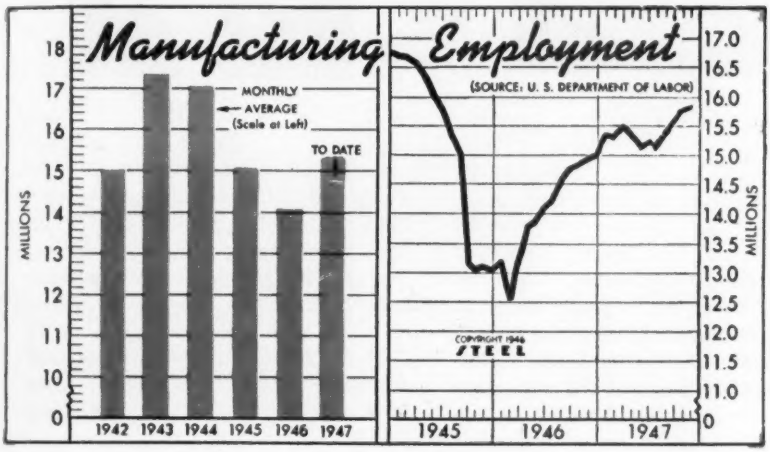
† Preliminary. ‡ Federal Reserve Board.

Federal Reserve Board's Production Indexes

(1935-39=100)

	Total Production		Iron, Steel		Nonferrous	
	1947	1946	1947	1946	1947	1946
Jan.	189	160	192	102	204	150
Feb.	189	152	191	43	205	141
Mar.	190	168	196	169	199	139
Apr.	186	165	195	159	197	132
May	185	159	197	109	187	128
June	184	170	193	154	179	137
July	177	172	181	180	172	151
Aug.	182	178	188	184	171	159
Sept.	186	180	195	185	174	172
Oct.	190	182	204	184	179	184
Nov.	192	183	202	178	...	192
Dec.	...	182	...	159	...	197
Ave.	...	171	...	150	...	157





Factory Employment

(000 omitted)

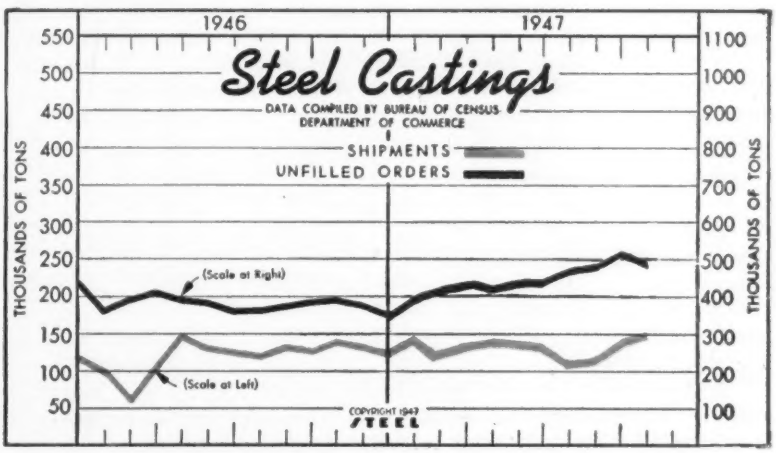
	1947	1946	1945
January	15,372	13,499	16,696
February	15,475	12,751	16,684
March	15,510	13,433	16,557
April	15,429	14,045	16,302
May	15,237	14,159	16,012
June	15,327	14,371	15,749
July	15,209	14,526	15,331
August	15,593	14,876	15,019
September	15,798	15,035	13,159
October	15,832	15,064	13,048
November	15,851	15,271	13,110
December	.....	15,348	13,059
Monthly Ave.	.....	14,365	15,060

Commercial Steel Castings

(Net tons in thousands)

	Shipments		Unfilled Orders*	
	1947	1946	1947	1946
Jan.	139.0	102.5	365.5	359.5
Feb.	125.6	60.6	421.4	387.2
Mar.	134.9	104.5	434.9	406.4
Apr.	144.2	146.6	427.6	384.7
May	140.9	130.8	443.2	374.2
June	139.0	121.5	445.5	354.4
July	117.0	117.5	473.9	356.8
Aug.	120.4	129.7	478.6	373.7
Sept.	137.4	126.5	526.2	380.6
Oct.	148.4	137.3	497.3	384.1
Nov.	....	130.6	....	372.1
Dec.	....	123.9	....	362.8

* Castings for sale.



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$12,911	$15,666	$13,272	$12,212
Federal Gross Debt (billions)	$256.8	$256.7	$259.0	$259.5
Bond Volume, NYSE (millions)	$22.6	$24.2	$21.3	$33.6
Stocks Sales, NYSE (thousands)	4,818	5,336	5,484	5,158
Loans and Investments (billions)†	$65.3	$65.4	$65.0	$56.2
United States Gov't. Obligations Held (millions)†	$37,366	$37,653	$38,632	$35,837

† Member banks, Federal Reserve System.

PRICES

STEEL's composite finished steel price average	$78.05	$76.32	$75.41	$67.91
All Commodities†	163.0	162.5	159.8	139.6
Industrial Raw Materials†	183.4	183.4	177.9	154.2
Manufactured Products†	155.0	154.4	152.5	134.5

† Bureau of Labor Statistics Index, 1926=100.

Men of Industry

NORMAN C. EINWECHTER

LeROY CAMEL

M. W. REED

Carpenter Steel Co., Reading, Pa., announces that **Norman C. Einwechter,** assistant to the vice president, will be in charge of the Philadelphia-Reading sales territory, with headquarters in Philadelphia. Mr. Einwechter has been associated with the company since 1929.

—o—

Ray W. Rowney, formerly assistant treasurer of Sawhill Mfg. Co., Sharon, Pa., has been promoted and elected to the office of treasurer. He has been connected with the company for the past three years, and formerly had been affiliated with Youngstown Sheet & Tube Co. at Youngstown.

—o—

Robert E. Carbauh has been named sales manager of a new department for the development and promotion of fire control equipment by Titeflex Inc., Newark, N. J. Prior to joining the Titeflex organization, Mr. Carbauh was manager of the Aircraft Division for Wilcolater Co., Elizabeth, N. J. Previously he was with the Spencer Thermostat Co., Attleboro, Mass., for 14 years, serving as liaison engineer in charge of its Washington office.

—o—

A. Robert Seass has been elected comptroller, Hamilton Mfg. Co., Two Rivers, Wis. He had been employed previously by General Electric Co. He comes to Hamilton Mfg. Co. from the position of comptroller of Milled Screw Products Co., Western Rust-Proof Co., and B. R. Paulson & Co., affiliates, Chicago.

—o—

Henry V. Erben has been elected a vice president of General Electric Co., Schenectady, N. Y., and becomes general manager of the apparatus department. He succeeds **Roy C. Muir,** company vice president, who retired after more than 42 years' service. **John D. Lockton** has been elected treasurer of the company, succeeding **Jesse W. Lewis,** retired after more than 37 years' service. Mr. Erben has been a commercial vice president and assistant general manager of the apparatus department, and Mr. Lockton an assistant treasurer.

—o—

W. F. Newberry, formerly industrial sales manager, has been appointed assistant director of sales, Detrex Corp. Directly reporting to Mr. Newberry will be **LeRoy Camel,** the new sales manager of the Industrial Products Division, **H. S. Tweedy,** industrial service manager, **H. J. Lucey,** oil-extraction and export sales manager, and **G. W. Walter,** advertising and sales promotion manager.

—o—

Otto T. Englehart, Washington attorney, has been elected president of the Beryllium Corp., Reading, Pa. He formerly had been a special assistant to the Attorney General.

—o—

Edward M. Douglas, vice president, International Business Machines Corp., New York, has been elected to the board of directors of the corporation.

—o—

J. Paul Keefe, former director of labor and public relations for Ingalls Corp., Birmingham, has been made director of industrial relations for the Alabama Dry Dock & Shipbuilding Co., at Mobile, Ala.

—o—

Weiss Steel Co. Inc., Chicago, jobber and warehouse, announces the association of **W. J. Hanna,** formerly district sales manager of Republic Steel Corp. for a number of years. Prior to coming to Chicago as district sales manager for that corporation, he had served in the same position in Detroit.

—o—

M. W. Reed, former chief engineer, American Steel & Wire Co., Cleveland, subsidiary of U. S. Steel Corp., has been appointed chief engineer of the parent corporation. He has served with subsidiaries of U. S. Steel Corp. continuously since 1916, and has been vice president-engineering, Carnegie-Illinois Steel Corp., since April of this year.

—o—

Samuel H. Collom Jr. has been elected executive vice president in charge of production of the Pennsylvania Flexible Metallic Tubing Co., Philadelphia. He has served as vice president and treasurer.

—o—

Lewis Hamlin, vice president in charge of plant operations at Redmond Co. Inc., Owosso, Mich., manufacturer of electrical motors, has been named executive vice president. He has been associated with the company since 1936.

—o—

Liquid Conditioning Corp., Linden, N. J., announces appointment of **Tom Charbonneau** as Florida representative, with headquarters at Lakeland, Fla., and **Ramon I. Gil** as representative in Puerto Rico, with headquarters at San Juan.

—o—

Albert R. Hutchings has been appointed executive engineer in charge of engineering and manufacturing for the Carlyle Johnson Machine Co., Manchester, Conn., industrial clutch

You asked for it – HERE IT IS!

NEW– BAKER 1000 lb. ELECTRIC FORK TRUCK

only *$2791* — **INCLUDING BATTERY AND CHARGER**

● Narrow aisles, limited floor-loading capacity, congested areas, small and low-capacity elevators no longer need deprive plants of the advantages of mechanized handling with electric fork trucks. Designed to meet these specific problems, this new truck finds application wherever loads may be limited to 1000 lbs. Its low price makes it possible to use fork trucks and pallets on many applications for which the cost of equipment, in the past, was not justified.

Baker Type FQH Center-Control Fork Truck

Capacity: Standard rating 1000 lbs. for 30 inch load length.

●

Weight: Truck complete with Battery 2805 lbs. Weight with full load (3805 lbs.) permits use on floors having limited capacity, on low-capacity elevators, and for loading highway trucks.

●

Dimensions: Overall length, excluding forks, 53⅝ inches. Width 28 inches. Turning radius – outside – 60 inches. Requires only 97½ inches with 30 inch load to make right angle turn. Tilting-telescoping fork lift of 108 inches with 83 inch overall nested height.

●

Power Equipment: Battery suitable for full 12-hour operation.

●

Charging Equipment: Single-circuit motor-generator charger with automatic charge control and shut-off.

●

Price: Complete with battery and charger $2791, with battery only $2441.

●

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●

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manufacturers, succeeding **A. R. Coe,** vice president, who has retired. Mr. Hutchings was formerly a staff member of Kenneth A. McIntyre Associates, Cleveland industrial consultant. Previously he had been production manager for B. F. Perkins & Son Inc., paper machinery manufacturer, Holyoke, Mass., and works manager for the Compo Shoe Machinery Corp., Boston.

—o—

Irving Grombacher has been elected president of Royal Metal Mfg. Co., Chicago. Formerly general manager, he is succeeded in that position by **Joseph Salomon.** Since June of this year, Mr. Grombacher has been executive-in-charge and acting president of the company, succeeding **Joseph M. Miroff,** retired.

—o—

Charles W. Myers, who started work in the Cuyahoga Works of American Steel & Wire Co., Cleveland, as a chemist in 1923, has been named director of spring sales in the Manufacturers Products Sales Division of this U. S. Steel Corp. subsidiary company. He has been serving since 1946 as assistant manager of the Wire Rope & Construction Materials Division, where he is succeeded by **Edwin T. Eggers,** recently named special representative for the company in the midcontinent oil fields.

—o—

Arthur C. Treece, assistant manager of the Coshocton, O., works, chemical department of General Electric Co., has been named manager of a new GE plastics plant at Pittsfield, Mass. He succeeds **Guy M. Stone** who has been named assistant to the manager of the company's Plastics Division.

—o—

George G. Raymond Jr. has been named sales manager, Lyon-Raymond Corp., Greene, N. Y. **William L. Peck** has been named assistant sales manager; **Frank Forsberg,** factory manager, and **Seth Wiley,** purchasing agent.

—o—

C. M. Snyder has been appointed manager of the New England sales district office of the lamp department of General Electric Co. He succeeds **C. C. Walker,** who becomes a commercial vice president of the company in Boston. Mr. Snyder has been with the New England sales district since 1928 when he became its engineer. He was appointed assistant to the manager of the district in 1940.

—o—

Thomas Steel Co., Warren, O., announces election of **George C. Floyd** as vice president of operations.

—o—

Dr. W. R. Ingle, who has been director of the American Bureau of Metal Statistics since its formation in 1921, has retired from that position. He will be succeeded by **R. R. Eckert,** secretary of the Copper Institute, who continues in that position, and as secretary of the United States Copper Association, trade groups which specialize in the compilation of data on the copper industry.

—o—

C. W. Hazeltine, vice president, secretary and treasurer of Mack Trucks Inc., and director of Mack Mfg. Corp., New York, has retired from these positions. He joined Mack Trucks Inc. in 1912. Mr. Hazeltine is succeeded as treasurer by **F. W. Sommer,** and as secretary by **T. V. Homan.**

—o—

H. H. Ranier, manager, distributor sales in the Radio Tube Division of Sylvania Electric Products Inc., New York, has transferred operations from Chicago to the firm's office in New York.

—o—

Kenneth F. Ames, general sales department member, Caterpillar Tractor Co., Peoria, Ill., and **Russell S. Cornell** and **Truman E. Sage,** district sales representatives, have been named assistant sales managers of the Central, Eastern and Western Sales Divisions respectively. Mr. Ames and Mr. Cornell will make their headquarters at the Peoria plant, and Mr. Sage will serve at the San Leandro, Calif., plant.

—o—

E. T. Adams has been appointed director of purchases of Kerotest Mfg. Co., Pittsburgh. He has been foreign representative for Kerotest, and for 12 years had been purchasing agent of the Sinclair Oil Co. in Mexico, and prior to that in the material department of Standard Oil Co. of Venezuela.

—o—

Charles B. Proudfoot, formerly assistant director of Engineering and Physics Division, Frederic Flader Inc., North Tonawanda, N. Y., has been engaged by the Carborundum Co., Niagara Falls, N. Y., as senior research engineer in physics of the company's research and development laboratory at Niagara Falls.

—o—

Alfred J. Olson has been appointed assistant sales manager of the Chicago plant of Joseph T. Ryerson & Son Inc. He succeeds **Ray C. Page,** who was recently named sales manager of the company's new steel service plant under construction in the San Francisco area.

—o—

Elmer F. Pierson, president, Vendo Co., Kansas City, Mo., has been elected president of the National Automatic Merchandising Association.

—o—

George R. Vassily has been appointed representative in charge of sales, E. W. Bliss Co., Detroit, of mechanical and hydraulic presses and can machinery in the Pittsburgh area. Mr. Vassily had been sales engineer at the Brooklyn, N. Y., office of the company.

—o—

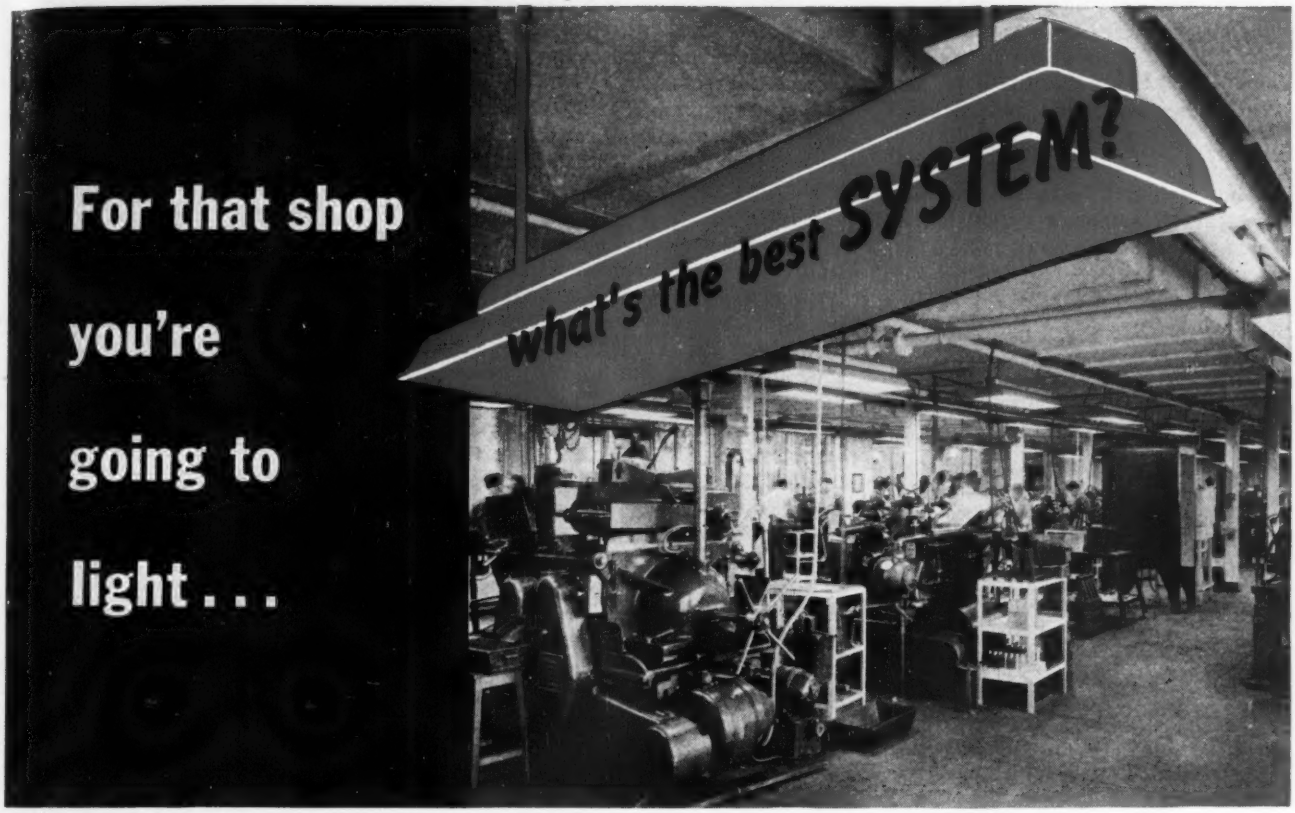
E. D. Cayia has been appointed auditor in charge of accounts, and **J. E. Clermont,** auditor in charge of audits and procedures, Inland Steel Co., Chicago. **W. A. Kendrick,** general auditor of the company, has retired after 30 years' association with the company.

—o—

Hugh Comer, president, Avondale Mills, Sylacauga, Ala., has been made

E. T. ADAMS

GEORGE. R. VASSILY



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a member of the board of Allis-Chalmers Mfg. Co., Milwaukee, succeeding **John H. Collier,** chairman of the board, Crane Co., who has resigned because of ill health.

—o—

John M. Ellis, assistant to vice president, Bethlehem Steel Co., Bethlehem, Pa., has retired, following 44 years as a Bethlehem Steel Co. sales executive.

—o—

Alan P. Schreiber has been appointed to the sales staff of Tracerlab Inc., Boston, to be in charge of sales contacts with the chemical industry for new equipment, processed radioisotopes, and for development of industrial uses for radioactivity. He will also act as editor of *Tracerlog,* the monthly technical publication of Tracerlab Inc.

—o—

Galen S. Woodruff has been appointed sales engineer in the Cleveland office of Udylite Corp.

—o—

R. W. Wire has been elected president and general manager of Loffland Bros. Co., Tulsa, Okla. He has been sales manager of the southwestern area for National Tube Co., with headquarters at Dallas, Tex., for the past two years, and has been associated with that company in various positions for the past 25 years.

—o—

Harry F. Gracey, training director in charge of management development of SKF Industries Inc., Philadelphia, has been elected president of the Pennsylvania Society of Training Directors. He succeeds **C. M. Oberholtzer,** training director of the Lancaster, Pa., plant of Victor Division, Radio Corp. of America. Other executive officers elected by the society are: **J. E. Kennedy,** supervisor, Management Training Division, Pennsylvania State College Extension Service, vice president; and **W. J. Jarrett,** training director, James Lees & Co., Bridgeport, Pa., secretary-treasurer.

—o—

Appointment of three new zone sales managers is announced by General Detroit Corp., Detroit: **Charles W. Self** will be in charge of the Cincinnati zone office; **Paul R. Warren,** in charge of the Boston zone office; and **John Macksey,** in charge of the St. Louis zone office.

—o—

Sir Andrew McCance will take office as president of the British Iron & Steel Institute next spring, following the annual general meeting to be held in May. In 1919 he became associated with David Colville & Sons Ltd., Glasgow, Scotland, which he joined as advisory metallurgist. He became a director of the firm in 1930 and was appointed deputy chairman and joint managing director of the present firm of Colvilles Ltd. in May, 1944.

—o—

W. H. S. Bateman, Philadelphia district sales representative of the Champion Rivet Co., Cleveland, has retired after more than half a century of affiliation with the iron and steel industry. **Raymond B. Johnson** succeeds him at Philadelphia, and this office will now become a direct sales branch office of Champion Rivet Co. In 1893 Mr. Bateman became associated with the old Lukens Iron & Steel Co. of Coatesville, Pa., now the Lukens Steel Co. Gradually he took on additional lines of products to sell, including that of Champion Rivet Co.

—o—

Thomas V. Koykka has been appointed to the board of directors of Lincoln Electric Co., Cleveland. He is a partner in the law firm of McKeehan, Merrick, Arter & Stewart and Geo. M. Cottrell in that city. He will serve on the board to fill the unexpired term of his partner, the late W. B. Stewart.

—o—

H. Ward Zimmer has been elected vice president in charge of manufacturing operations for all company divisions of Sylvania Electric Products Inc., New York. He formerly had been vice president in charge of the Tube Division.

—o—

R. Conrad Cooper has been elected vice president-industrial engineering, United States Steel Corp. of Delaware. Mr. Cooper has been assistant vice president of industrial relations since 1945. For five years previously he had been assistant vice president, Wheeling Steel Corp., Wheeling, W. Va., which he joined in 1937 on the staff of the vice president in charge of operations.

—o—

Ralph D. Parker and **J. Roy Gordon,** Copper Cliff, Ont., and **Herbert G. Fales,** New York, have been elected assistant vice presidents of International Nickel Co. of Canada Ltd., and **Walter C. Kerrigan, James F. McNamara** and **T. H. Wickenden** as vice presidents of the company's United States subsidiary, International Nickel Co. Inc. They continue in their present positions, which are, respectively: Mr. Parker, general superintendent, Mining & Smelting Division at Copper Cliff, Ont. Mr. Gordon, technical assistant to the vice president of the parent company. Mr. Fales continues as a vice president and director of International Nickel Co. Inc.; Mr. Kerrigan, manager, nickel sales department; Mr. McNamara, sales manager for the mill products; and Mr. Wickenden, manager of the Development & Research Division.

—o—

Calumet & Hecla Consolidated Copper Co., Detroit, announces election of three vice presidents: **A. E. Petermann,** general counsel, **H. Y. Bassett,** general manager of the Wolverine Tube Division, and **A. H. Wohlrab,** general manager of the Calumet Division. **Robert Livermore** has retired as vice president of the company, but remains a director.

—o—

John K. Northrop, president, Northrop Aircraft Inc., Hawthorne, Calif., has been elected president of the Institute of Aeronautical Sciences for 1948. He succeeds **Preston R. Bassett,** president of Sperry Gyroscope Co. Inc., Great Neck, L. I., N. Y.

—o—

C. L. Kenyon, assistant treasurer, General Electric Co., Schenectady, N. Y., has been appointed manager of a credit and collection division which the company opened the first of the year.

—o—

William C. Madsen has been appointed branch manager of the Gary, Ind., office of Reliance Electric & Engineering Co., Cleveland. He succeeds **H. J. Thompson,** who will become district sales representative in Gary for the Electrical Manufacturing Division of the National Acme Co.

—o—

Bernard L. Jones, formerly connected with Salem Engineering Co., Salem, O., has become assistant vice president in charge of sales for H. A. Brassert & Co., consulting engineers to the iron and steel and affiliated

WILLIAM C. MADSEN

WILLIAM E. GEIDT

Appointed manager, Advertising Division, Inland Steel Co., Chicago. Noted in STEEL, Jan. 5 issue, p. 358

JOHN F. SMITH JR.

Appointed general manager of sales, Inland Steel Co., Chicago. Noted in STEEL, Jan. 5 issue, p. 358

STANLEY L. WILLIS

Elected president and general manager, Standard Tube Co., Detroit. Noted in STEEL, Jan. 5 issue, p. 178

industries of New York. For a number of years, prior to 1944, Mr. Jones was connected with the rolling mill department of Inland Steel Co., Chicago.

—o—

D. E. Van Deusen, president and general manager of Kelly Reamer Co., Cleveland, has been elected president of the Cutting Tool Manufacturers' Association. He succeeds **E. A. Goddard,** president, Goddard & Goddard Co., Detroit. **Emil Gairing,** president, Gairing Tool Co., Detroit, has been elected vice president; **R. H. Wolfe,** president, Arrow Tool & Reamer Co., re-elected treasurer; and **Harry J. Merrick** continues as executive secretary of the association.

—o—

Three members of Cutler-Hammer Inc., Milwaukee, have been elected to chairmanships in the National Electrical Manufacturers Association. **F. A. Wright** has been elected chairman of the advisory committee, industrial control section; **A. R. Johnson,** elected chairman of the knife and enclosed switch section; and **R. A. Millermaster** has been elected chairman of the general engineering committee of the knife and enclosed switch section, and also appointed chairman of the general engineering committee small air circuit breaker section.

—o—

Harry O. Bercher has been appointed director of purchasing and traffic, International Harvester Co., Chicago, succeeding **John Morrow Jr.,** retired as vice president of purchasing and traffic after more than 45 years of service with the company, which he joined in 1902 as office boy at the Springfield, O., works. Mr. Bercher will continue also as general manager of the Steel Division, which position he has occupied since January, 1946.

—o—

Jay DeEulis has been appointed engineering editor of STEEL magazine. He joined STEEL as assistant editor in 1937. In 1939 he was granted a one-year leave of absence to serve as editor of *New Equipment Digest.* He entered the Navy in 1943 and upon his discharge early in 1946 as a lieutenant, he immediately rejoined STEEL as associate editor. Mr. DeEulis has been serving as active head of the engineering department of STEEL for the past six months.

OBITUARIES . . .

Frederick P. Huston, 57, engineer and metallurgist, Development & Research Division, International Nickel Co. Inc., New York, died recently from a heart attack. He had been with the company 20 years and was in charge of developments in the application of nickel alloys in the railroad field. He was co-inventor of a process used in producing stainless-clad plate.

—o—

W. M. Neckerman, assistant to the vice president in charge of operations, Republic Steel Corp., Cleveland, died Jan. 5. He served in the capacity of pipe consultant, and maintained offices at Youngstown.

—o—

Frank Alborn, 69, former chief engineer, White Motor Co., Cleveland, and associated with the motor car industry since early in the century, died Jan. 4 at his home in Cleveland Heights.

—o—

Michael J. Devaney, 62, who recently relinquished his post as assistant to manager of operations, Chicago district, Carnegie-Illinois Steel Corp., to become a consultant in the operating department in the corporation's Pittsburgh headquarters, died Jan. 3 in Chicago. He had been associated with the company 47 years.

—o—

C. H. Clauser, 73, died recently after 25 years in the safety shoe business with Lehigh Safety Shoe Co., Allentown, Pa., makers of the steel toe box which Mr. Clauser had promoted.

—o—

Charles F. Morgan, 53, purchasing agent, Interlake Iron Corp., died Jan. 6 following a heart attack. He had been with the Toledo Furnace Co. and its successor, the Interlake Iron Corp., Toledo, O., since 1912.

—o—

Carl C. Wright, 50, technical director, American Electric Fusion Corp., Chicago, was killed Dec. 26 when struck by an automobile.

—o—

Norman B. Clarke, 51, works superintendent, Central Furnace plant, American Steel & Wire Co., Cleveland, died Jan. 5.

—o—

Charles B. McElhany, 72, retired vice president and general manager of sales, Cambria Steel Co. and later vice president of the American Steel Export Co., New York, died Jan. 4.

—o—

Charles H. White, 58, director of sales in the south and western regions, Industrial Brownhoist Corp., with headquarters in Chicago, died suddenly Dec. 24 in Cleveland. He had been secretary and director of exhibits of the National Railway Appliance Association.

WELDMENTS

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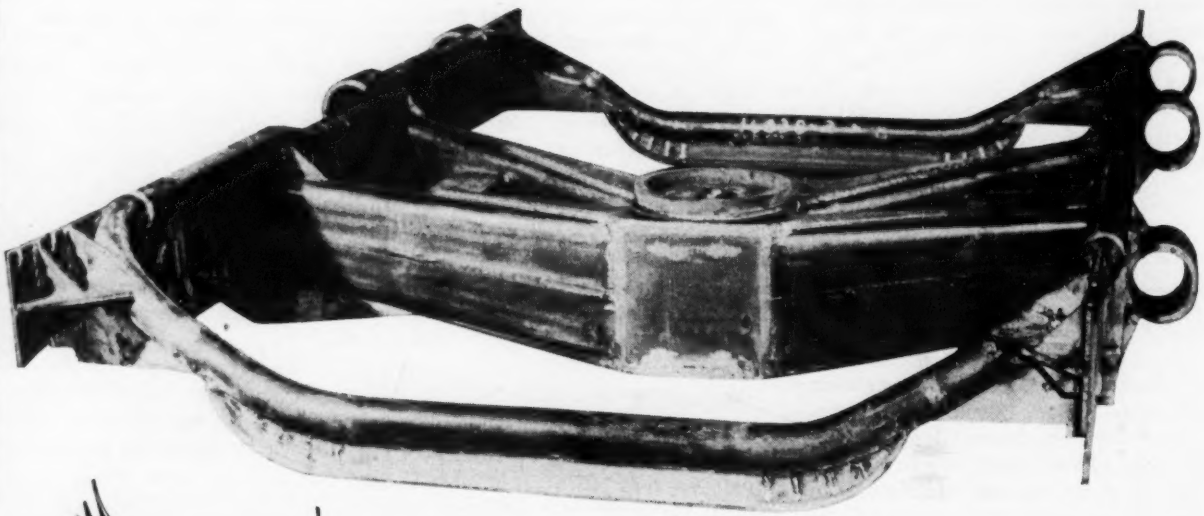

THE AMERICAN WELDING AND MANUFACTURING COMPANY

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Engineering News . . . AT A GLANCE

WINTER "INSURANCE"—In Peoria, Ill., it is learned, Keystone Steel & Wire Co., is now completing the conversion of its gas-fired galvanizing and patenting furnaces to oil standby. In event of a repetition of last year's gas shortage, which the company anticipates, this equipment along with steel mill operations can be maintained.

AIDS RESEARCH—Until recently, research at extremely low temperatures was hampered by fact that the scientist was forced to devote much of his attention to the problem of reaching low temperatures. Now, much of this time can be released for purely research purposes through the development by Arthur D. Little Inc., Cambridge, Mass., of a device which liquefies helium and maintains any temperature down to 2° Kelvin, or 456° F below zero. Not only does the development maintain these low temperatures, but it also includes a means for compressing the helium in ordinary lubricated compressors and storing it without contamination.

"SHIP-SHAPED SAFETY"—Chassis of the Tucker car is reported to be based on a ship-shaped frame that presents the side members around the outside edge of the body in order to protect it from accidental impacts. Side impact forces are said to be fully absorbed by these frame members.

RAISES GREEN STRENGTH—Green strength of 18-8 stainless steel powder compacts may be markedly improved by heat treatment of the powder before pressing, it was learned from Charles Hardy Inc., New York. If the loose powder is heat treated at 900° C in a neutral or reducing atmosphere for 30 minutes, it was pointed out, green strength is improved nearly ten times the value for the untreated powder—the ratio being based on New Jersey Zinc Co.'s rattler test.

TO PRODUCE "JETS"—Materials, tools and machinery already are beginning to arrive at the East Hartford plant of Pratt & Whitney which is expected to produce the Rolls-Royce Nene turbo-jet engines for the Navy's Grumman fighter plane. The Navy reports some 500 different parts will be produced in the plant itself. Orders for some 400 other parts already are in the hands of suppliers of semi-finished and finished parts. Delivery of the first completed engines is expected late in 1948.

IMPROVES CUTLERY MAKING—In Chicago, Ekco Products Co. is using a resin developed by B. F. Goodrich Chemical Co., Akron, O., to improve manufacturing techniques of its cutlery. According to the company, the development is found very satisfactory for bonding many types of handles to metal. Bonding strength of the resin is reported to be three times stronger than the cement formerly used.

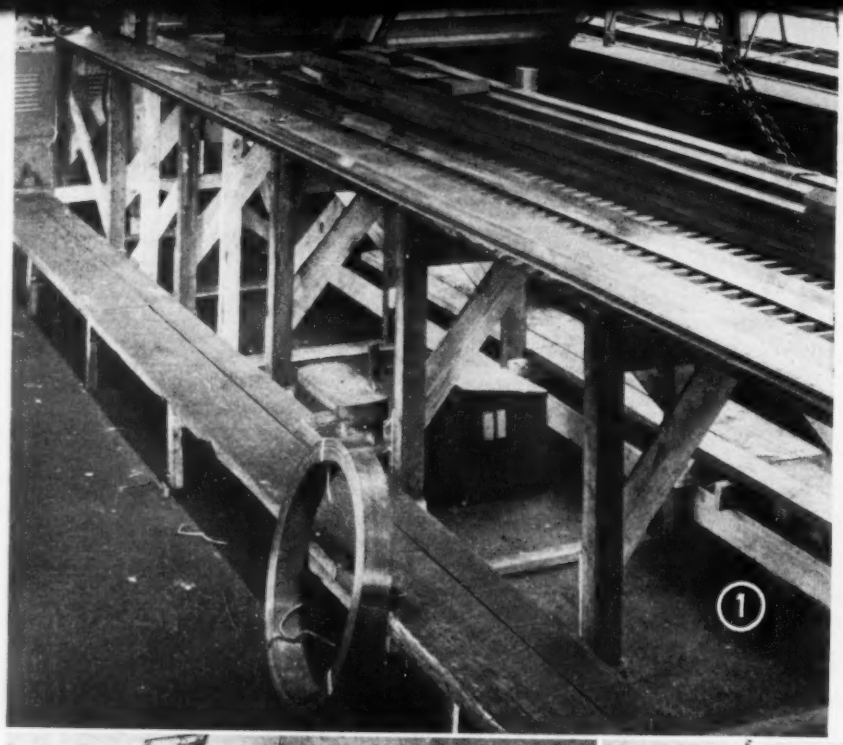
CLADDING STEEL PLATES—In the most common method of producing clad steel plates slabs of stainless and carbon steel of properly proportioned thickness are cleaned thoroughly at the touching surfaces, welded together along the edges and then rolled to desired thickness at high temperatures to bond the two dissimilar metals. Another method, according to Tempil Corp., New York, consists of pouring molten carbon steel around the stainless slabs in a mold and rolling the composite. In still another, desired alloy steel is made and intermelted against one face of a slab or ingot. Composite ingot then is heated in a soaking pit and rolled to gage.

WELDING BY THE MILE—More than 13.5 miles of oxygen-free copper, required for large field coils of the 2300-ton magnet structure of Columbia University's atom smasher, were joined by a controlled technique of flash welding developed by American Welding & Mfg. Co., Warren, O. Process was instrumental in the completion of 1200 perfect copper welds to end one phase of the school's cyclotron building program—making rapid work of what normally is considered an impossible job for flash butt-welding. (p. 66).

CONTROL ELEMENTS—During the manufacture of sand cast manganese bronze bearings for locomotive applications at the Erie Works of General Electric it was found that the bearings could be tinned perfectly and without cracking, even maintaining the required physical properties, by changing the percentage of the alloying elements in the production of the bearing itself. Secret of the process is to keep the iron, aluminum and manganese practically constant, varying the zinc and examining the resulting alloy metallographically. (p. 68).

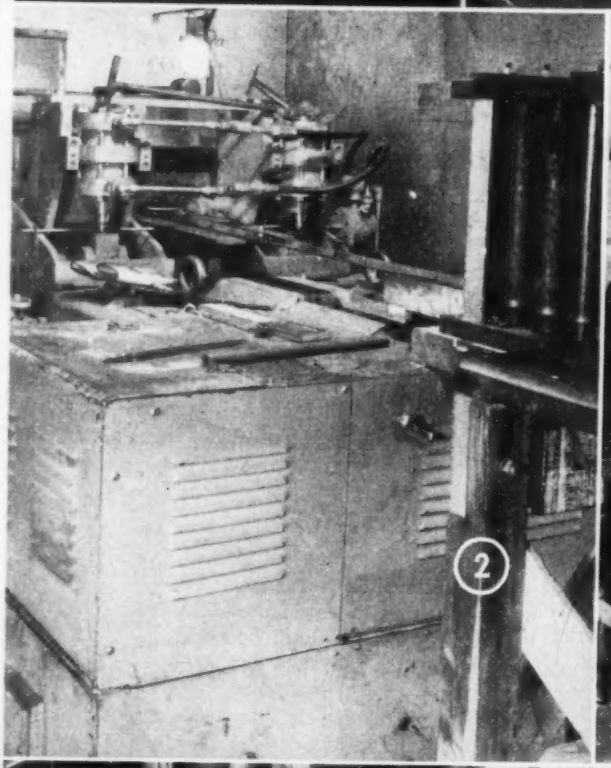
CARRIES LOAD OF BRIDGE—Load carrying capacity of a ball bearing is subject to as accurate mathematical determination as is the strength of a steel bridge, it is pointed out. In machine operation, high speed is a test not only of the accuracy with which a bearing is assembled, but also of the efficiency of its basic design. (p. 72).

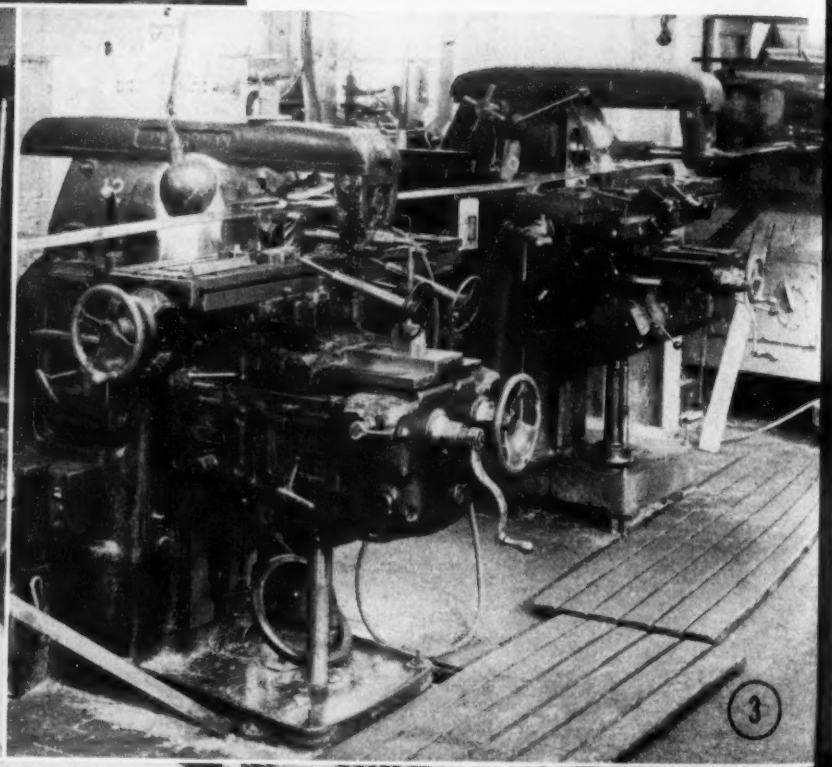
PICKLE LIQUOR PROBLEM—in probing the problem of waste pickle liquor disposal in steel and allied industries, it was found that the absorption procedure of ferrous sulphate seems to be definitely connected and dependent on the acid concentration present in the sample. It seems possible, from experimental results obtained, that not only ferrous sulphate is absorbed but also a certain amount of the sulphuric acid and possibly other trace metals present in the waste pickle liquor. (p. 90).

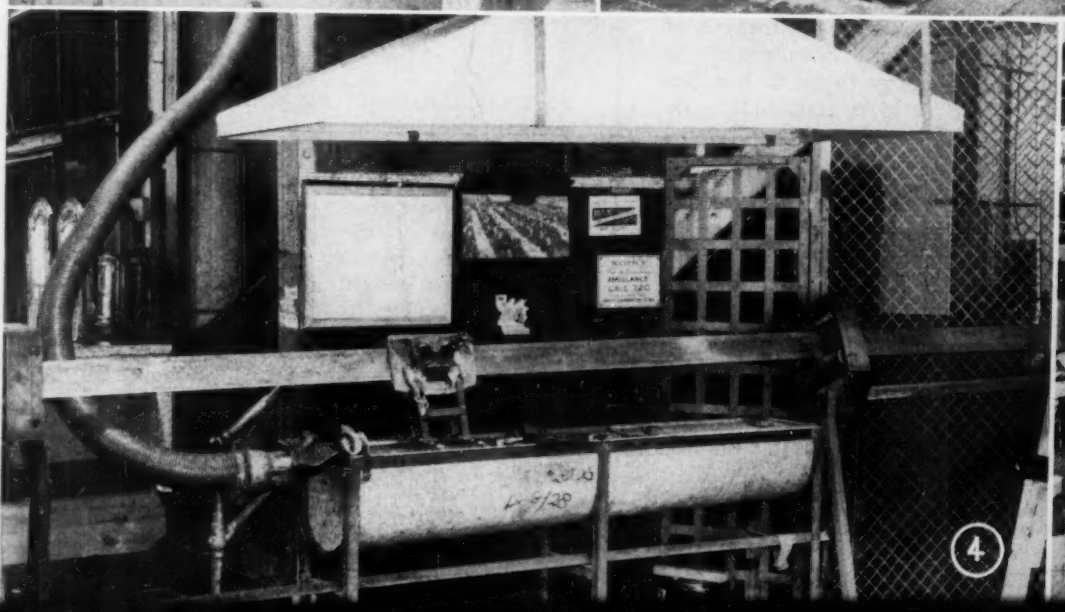


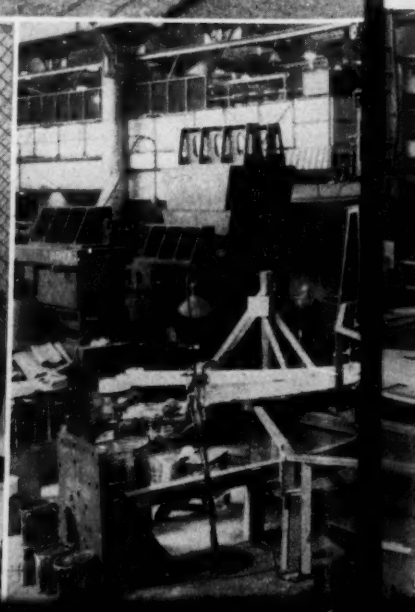
Controlled

Flash Weld









olle Techniques developed to

/Copper Coils

. . . for 2300-ton magnet structure of Columbia University's cyclotron

BECAUSE copper is such an efficient conductor of both heat and electricity, its practicality as a material for flash-butt resistance welding has been generally conceded as virtually nil. Lacking electrical resistance for the ready creation of forging heat by means of current input, copper is by the same token quick to dissipate generated heat.

The research department of American Welding & Mfg. Co., Warren, O., has however, developed a controlled technique for flash welding copper which enabled the firm to complete 1200 perfect copper welds in one phase of Columbia University's cyclotron building program.

Sixty-foot mill lengths totalling more than 13.5 miles were required to be joined in continuous strip for large field coils for the 2300-ton magnet structure of the atom smasher, being built under the sponsorship of the Navy's Office of Scientific Research. One of the company's welders, a 250 kilowatt-ampere machine normally used for resistance-welding steel, was equipped with electronic controls to carry out the theoretically established high speed, precision welding cycle. The machine was set up in the New York Naval Shipyard at Brooklyn, N.Y., where it fed its output of strip to shipyard machine shop technicians for coiling on a large boring mill.

With a fixed cycle, it made rapid work of what normally would be considered an impossible job for flash butt-welding. Continuous testing proved that the welds possessed the same physical and electrical characteristics as the parent metal throughout.

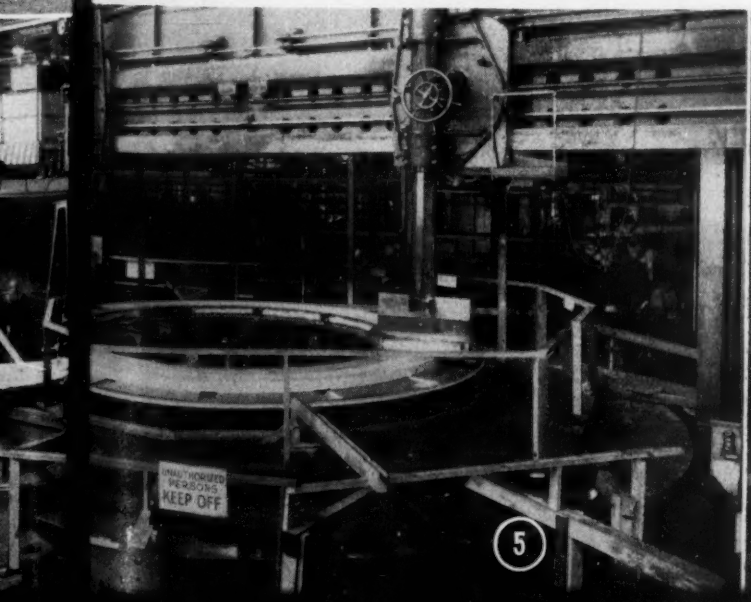
"Raw material" for the cyclotron coils was oxygen-free copper, delivered in small 60-foot rolls. These were unrolled on the roller feed table, Fig. 1, and fed to the adjacent welder to be joined. Special clamping dies, with more than the normal bearing surface enabled the 250 kilovolt-ampere flash-butt resistance welder shown in Fig. 2, to grip the stock positively, without marring the surface. Straight-edge outriggered held the stock in perfect alignment.

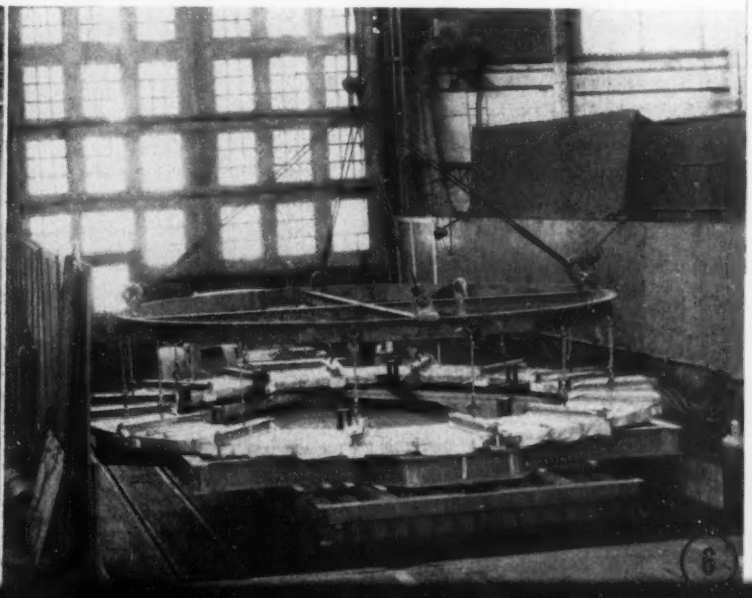
Two milling machines, Fig. 3, were installed to mill off excess upset metal, reducing the weld to the actual strip dimension. The first machine operated on the top and back edge of the strip, while the second finished off bottom and front edge.

Fourth station in the line was a solvent cleaning tank, Fig. 4, with continuous wiping of the strip to remove drawing and cutting oils, small chips, etc.

The Navy Yard's 36-foot boring mill, Fig. 5, provided an ideal means of winding tight coils to precise dimensions; the mill was one of the principal reasons the shipyard was chosen as a coiling site. A ton of tension was maintained during winding, while the horizontal roll mounted on the right-hand tool post provided hold-down pressure. Tapered, the roll accommodated increasing surface speed as the coil diameter grew, avoiding drag. The hold-down roll was set at the high limit of the coil width, 4.004-inches. Insulating paper, coated with a zinc-oxide and oil mixture, can be seen entering the coil at the left.

One of the 12 coils is shown in Fig. 6 being transferred by overhead crane from the boring mill to a truck-trailer, at the machine shop loading dock for shipment.





TINNING MANGANESE B

Difficulties encountered in production of sand cast bearings overcome by investigating specifications, checking components for zinc equivalence and then recommending production of units according to analyses that more rigidly define zinc-equivalent elements

SUCCESSFUL tinning of copper-zinc alloys is always a metallurgical problem. Addition of iron, aluminum, and manganese to the basic alloy to improve its physical properties frequently creates tinning difficulties, because the high degree of zinc equivalence of these elements determines whether or not the bronze will crack during the tinning operation.

At the Erie Works of General Electric Co., this problem was encountered during the production of sand cast manganese bronze bearings for locomotive applications. The bearings are subjected to both tinning and babbitting. Fig. 3 shows a typical bearing that cracked while being tinned.

Tinning is necessary because babbitt metal, 83.3 tin, 8.3 copper, and 8.3 antimony, does not form a satisfactory bond with brass or bronze, which were prevalent in the bearing liner. Consequently, it was necessary first to tin the liner to create a bonding agent.

A solution was found by investigating the specification to which the bearings were manufactured, checking the components for zinc equivalence, and then recommending the productions of the units according to a specification that more rigidly defined the zinc-equivalent elements.

Percentages Changed—By changing percentage of the alloying elements it was found that it is possible to produce bearings that can be tinned perfectly and without cracking, and still have the required physical properties. This is done by keeping the iron, aluminum and manganese practically constant, varying the zinc, and examining the resulting alloy metallographically.

Production technique followed with the new specification begins with machining the bearing liners, clamping the half liners, and cleaning, done in three steps. The first of these is in a cleaner, followed by a hot water rinse. This is followed by a muriatic acid dip, followed by another hot water rinse. Third step is a fluxing with an ammonium zinc chloride solution.

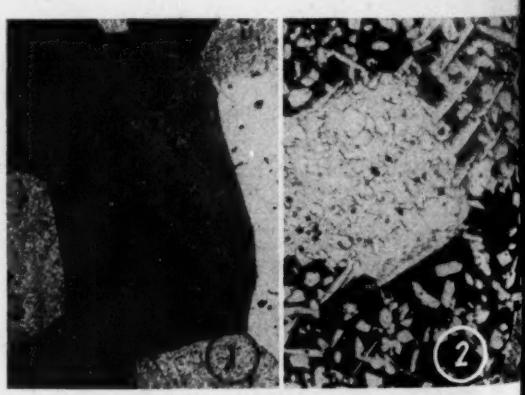
After being dried, the liners are tinned by dipping in molten tin at 375° C, babbitted by centrifugal casting at 525° C, and finish-machined. Fig. 4 shows the layout of the shop for the babbitting process, with centrifugal casting machine in background. Speed of this machine can be varied from 200 to 800 revolutions per minute, depending upon the size units being babbitted.

ASTM specification B147-44 had been used for sand cast manganese bronze bearings to be tinned and babbitted; its components are shown in Table I. Table II shows the constituents recommended as a result of the investigation. Physical characteristics of each are shown beneath the tabulations.

Results of Investigations—Investigations conducted on a number of castings of varying composition, Tables III and IV, showed that brinell hardness is directly related to the amount of iron, manganese, and aluminum contained, and that the zinc equivalence for successful tinning and babbitting is from 39.80 to 46.40 per cent, with the most successful results being obtained when the composition is closer to the former value.

Guillet's factors were used for determining the zinc equivalence of the alloying elements used in the bearing specification. According to these factors, one part of aluminum has the same effect upon the microstructure of the alloy as six parts of zinc, giving it a factor value of 6; on the same scale, the factor of iron is 0.9; manganese, 0.5; tin, 2.0; lead, 1.0; and nickel, −1.3.

Interpreted microstructurally, according to the standard copper-zinc constitutional diagram in Table V, an alpha or alpha plus beta structure, obtained up to the 46.40 per cent limit, can be successfully tinned and babbitted, since alpha forms the continuous phase, Figs. 1 and 2.



SE BRONZE

By I. R. VALENTINE
Works Laboratory
General Electric Co.
Schenectady, N. Y.

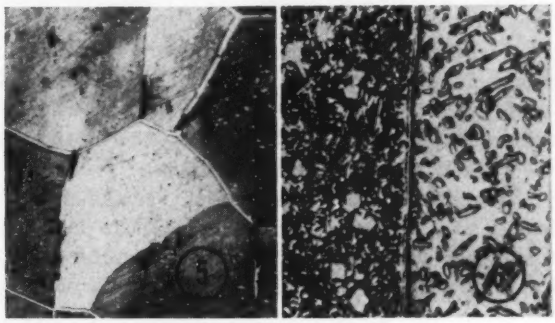
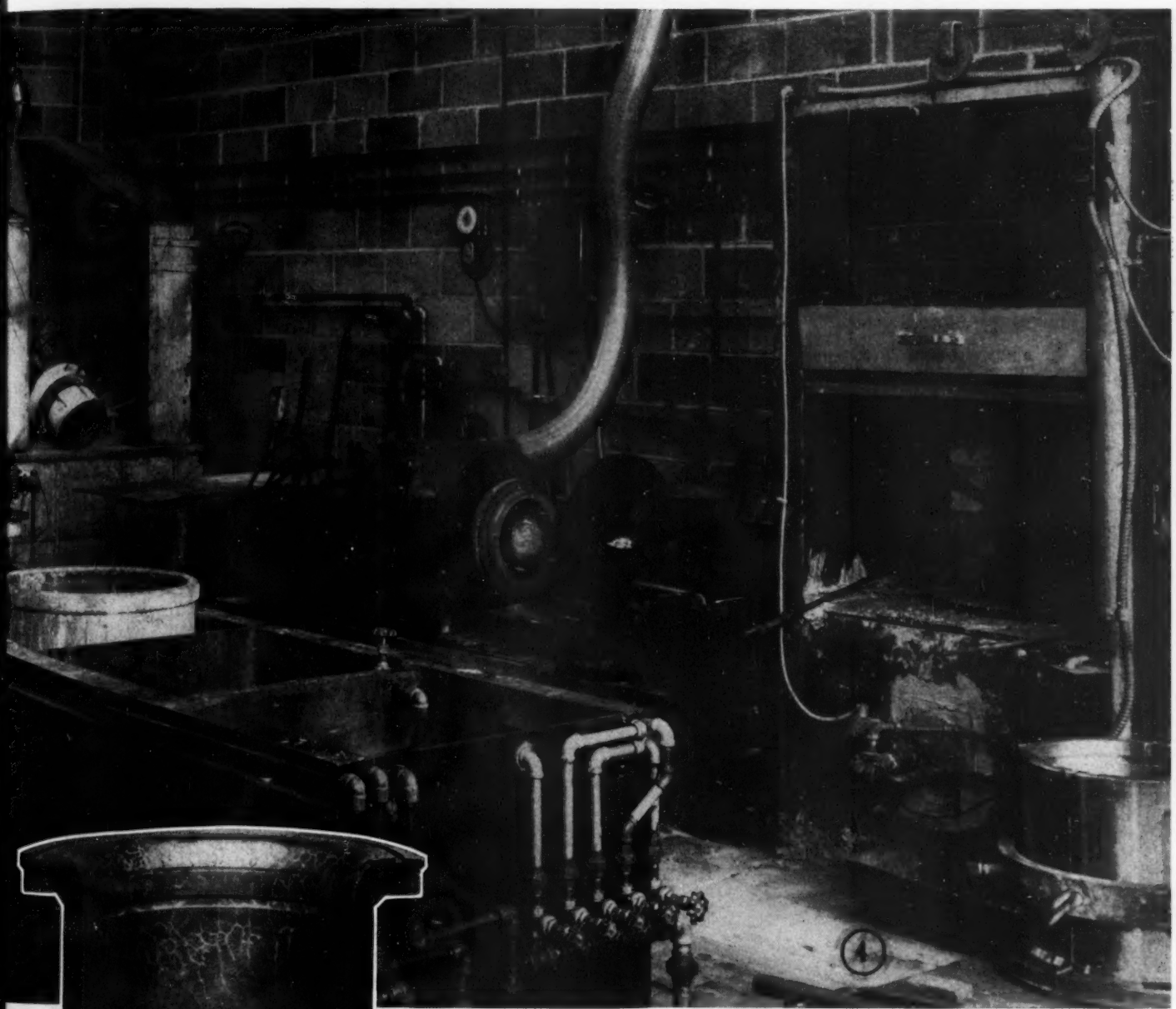


Fig. 5—Tin penetration in the B phase

Fig. 6—Lack of penetration in the A plus B phase



Figs. 1 and 2—An alpha or alpha plus beta structure obtained up to the 46.40 per cent limit can be successfully tinned and babbitted, since alpha forms the continuous phase

Fig. 3—Typical bearing, cracked while being tinned

Fig. 4—Layout of shop for babbitting process; centrifugal casting machine in background, left

Tin Penetration—The molten tin seems to have a very solvent action upon the grain boundaries in these beta or beta plus gamma bronzes, and penetrates the grain boundaries quickly after immersion, with resultant cracking. This tin penetration, it was thought, might be attributed to residual stresses prevalent in the beta condition, but the cracking continued when annealed beta castings were tinned. The investigation showed, however, that the intergranular solvent action of molten tin on bronzes in the alpha plus beta state, or at the lower level of the revised specification, seemed to be practically nonexistent. Fig. 5 shows the tin penetration in the B phase, and Fig. 6 reveals the lack of it in the A plus B phase, with the tin babbitt coating.

New Specification Tested — The new specification was tested by casting a ring 9 inches outside diameter, 6¼ inches inside diameter and with a 1¼-inch square section, with the following components:

Copper	50.62
Zinc	47.18
Aluminum	0.72
Iron	0.99
Manganese	0.47
Lead	0.01
Tin	None

This ring showed a tensile strength of 82,000; a yield point of 19,500, elongation of 22.5 per cent, a reduction of 23 per cent, and brinell hardness of 117. The casting showed 7500 pounds per square inch tension.

Zinc equivalence of this ring, it was thought, would put it in the beta-gamma range. This was confirmed when the casting was examined metallographically, with the results shown in Figs. 7 and 8. Fig. 9 shows the beta and gamma phase.

Figs. 7 and 8—Zinc equivalence of specially cast ring put it in the beta-gamma range

Fig. 9—Beta and gamma phase

TABLE I
COMPOSITION OF ASTM SPECIFICATION B147-44

Copper	55.0-60.0
Tin	1.00 max.
Lead	0.40 max.
Zinc	Remainder
Nickel	0.5 max.
Iron	0.4-2.0
Aluminum	0.5-1.5
Manganese	1.5 max.
Tensile Strength psi	65,000 min.
Yield Strength psi	25,000 min.
Elongation 2-inch %	20 min.

TABLE II
RECOMMENDED CONSTITUENTS

Copper	58.00-61.00
Manganese	0.20- 0.50
Iron	0.50- 1.25
Aluminum	.75- 1.00
Lead	0.20 max.
Tin	0.20 max.
Zinc	Remainder
"Zinc Equivalence"	39.80-46.40
Tensile Strength	50,000-75,000 psi.
Yield Strength	20,000 Min.
Elongation 2-inch %	25 Min.

TABLE III
CASTINGS TINNED (GOOD)

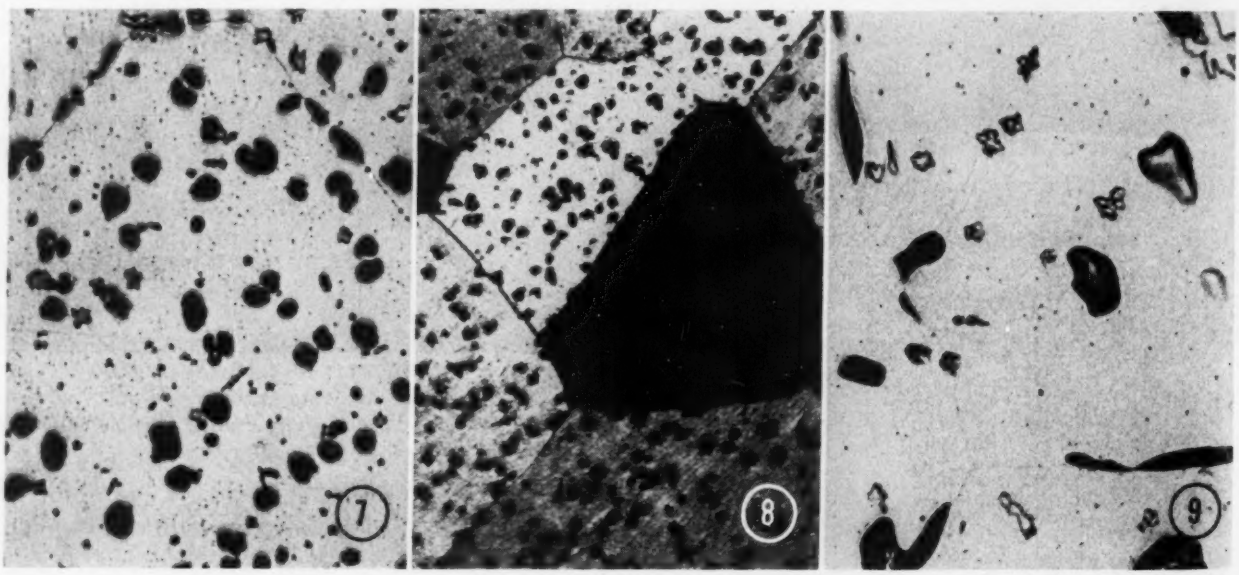
	Sample 13	Sample 14	Sample 15	Sample 724	Sample 893
Cu	58.00	57.25	58.45	58.37	63.76
Mn	.42	.47	.44	.45	.34
Fe	.96	.94	.47	1.01	.78
Al	.77	1.08	1.05	.64	.69
Pb	.02	.03	.04	.02	.01
Sn	.00	.00	.00	.00	.00
Zn	39.83	40.23	39.05	39.51	34.42
"Zn Equivalence"	45.54	47.82	46.03	44.52	39.45
Tensile Strength	74,500				
Yield Point	27,000				
Elongation	38.5				
Reduction	38.8				
Brinell Hardness	119				
Cu	58.23	57.55	56.88	58.93	
Mn	.44	.45	.42	.42	
Fe	1.03	1.00	.93	1.08	
Al	.70	.83	.55	.78	
Pb	.00	.01	.01	.01	
Sn	.00	.00	.00	.00	
Zn	39.58	40.01	41.15	38.70	
"Zn Equivalence"	44.93	46.12	45.50	44.57	

TABLE IV
CASTINGS TINNED (CRACKED)

			#10	#11	#12	#2
Cu	55.84	55.90	55.65	56.13	56.84	56.05
Mn	.48	.50	.49	.47	.45	.47
Fe	1.21	.86	1.12	1.05	.94	1.06
Al	.95	.81	1.06	1.00	1.10	1.25
Pb	.01	.01	.03	.04	.01	.04
Sn	.28	.22	.18	.00	.06	.23
Zn	41.23	42.21	41.47	41.31	40.60	40.90
"Zn Equivalence"	48.83	48.54	49.47	48.53	48.40	50.09
Tensile Strength psi						84,000
Yield Point—inch psi						35,000
Elongation 2-inch %						25.0
Reduction						26.8
Brinell Hardness						143

TABLE V

Composition		Micro structure
Copper %	Zinc %	
100 — 64	0 — 36	Alpha
60 — 53.5	36 — 46.5	Alpha + Beta
53.5— 51	46.5— 49	Beta
51 — 39	49 — 61	Beta + Gamma
39 — 31	61 — 69	Gamma



BRAINS VS. BRAWN: This week there is going on at the Public Hall in Cleveland an industrial exhibition, the careful study of which can have a highly desirable influence both on bank balances and labor relations throughout industry. I refer to the Materials Handling Show.

The industrial and engineering history of the United States to an amazing degree is the story of a series of brilliant victories of brain over brawn. Americans as a whole never have been lazy, nor have they been a feeble race of people. Quite the contrary, in fact. However, their sound common sense has caused many of them to realize that doing things "the hard way" is not the way toward more goods for more people.

So it is that for 150 years or more, Americans have been devising easier and faster ways of lifting and transporting all sorts of raw materials, parts in process and finished products. Oliver Evans applied scientific materials handling to grain handling and milling, using conveyor belts, traveling buckets, flight conveyors and screw conveyors prior to the year 1800. At an equally early period Capt. Samuel Morey of Fairlee, Vermont, was applying modern materials handling to lumbering operations on the upper Connecticut River.

In view of the ingenious materials handling applications developed by American engineers in the milling, mining, woodworking and many other fields, it is a sad commentary on production metalworking in this country that its materials handling techniques lagged so far behind metalcutting and forming methods so far into the 20th century.

That is why conveyorized plants such as that of Henry Ford at Highland Park caused such a furor of interest about the time of the first World War. They awakened many other metalworking organizations which literally had "slept over" like Rip Van Winkle as far as consciousness of the importance of mechanized handling was concerned.

Many industries still are asleep—or at least only half awake—to the dollars-and-cents and the morale value of the hundred-and-one methods and devices which now are available "ready-made" to relieve "$1.00 per hour and up" humans of Volga boatman methods of lifting and moving things in the shop.

This Materials Handling Show presents in working condition the ways and means for the quick making up of lost time in the case of industries which have been slow to wake up to the possibilities of moving things around mechanically. There will be many things which will surprise even those whose methods have not been revised in line with postwar improvements.

SOME THOUGHTS ON SAE: Once a year I get an intensive indoctrination in the mysteries of automotive engineering—and this is the week for 1948. This week of January 12 I am at the Book Cadillac Hotel in Detroit attending the annual meeting of the Society of Automotive Engineers.

My own interest in this meeting primarily is from the production point-of-view. Art Allen, Detroit editor of STEEL, and author of "Mirrors of Motordom", one of our weekly features, deals ably with the other phases. As an old "Stanley Steamer man" I am only too willing to defer to Art on internal combustion subjects in general.

However, I always have all that I can do to follow through on the papers which deal with machine shop practice phases of manufacturing vehicles which travel on sea, in the air and on the land. It was through SAE that I first became acquainted with the possibilities of tungsten carbide machining.

Clayton R. Burt, now chairman of the board of Pratt & Whitney, West Hartford, Conn., came back from Germany more than 20 years ago with convic-

Seen and Heard in the
Machinery Field

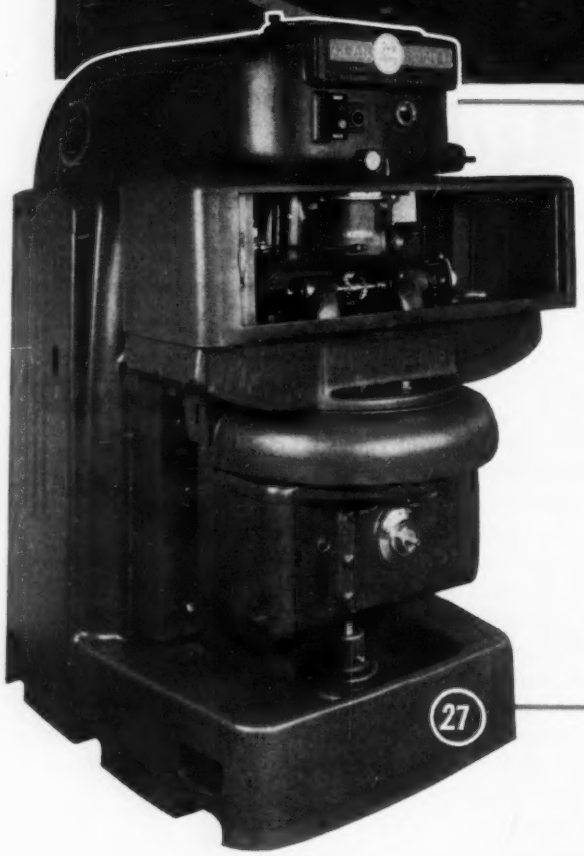
By GUY HUBBARD
Machine Tool Editor

tions which startled those of us who heard his carbide predictions at the SAE meeting at that time. It took some of his predictions a long time to come true, but they all did come true—as was amply demonstrated at the National Machine Tool Show in Chicago last September.

On the basis of such past experience, I rate the annual meeting of SAE as being far more effective than a crystal ball as a means for looking in the future of production machine shop practice—including new things to be machined, new materials to be machined, new tools and machines to do the machining, new demands for limits, and so on. When I say "machining" I have in mind also stamping, forming, forging and various other methods which "move metal" rather than remove it.

On the basis of what I now see "through the SAE" I cannot recommend too strongly to my machine tool friends that they study carefully and plan for the future in terms of effects of metal forming methods on the nature and extent of machining methods. I see many instances where metal scarcities, high material costs and production demands will cause big reductions in "rough machining". At the same time, I see great opportunities for finish machining to extraordinary accuracies, of parts "roughed out" by these other means.

Over the years, the automotive industry has had profound effects on many enterprises other than manufacturers of buggy whips, whip sockets, sleigh bells and things like that. Such technological changes happen much more quickly today than they did in the days of the curved-dash Oldsmobile. They are much more sweeping in their effects on related industries —including builders of machine tools. Spotted in time, they can lead to big business in new fields. Ignored, they can lead to sudden demise of old, established business. That is why I am at the SAE.



ANTIFRICTION BEARINGS

By L. E. BROWNE
Associate Editor, STEEL

MANUFACTURERS of ball bearings frequently claim their assembled products are ideas as well as bearings. This assertion is justified by the contribution being made by the antifriction bearing to modern industrial efficiency. Improvement in the product is accompanied by a wealth of design and engineering ideas having a vast influence on the increase in application of the ball bearing.

Versatility of ball bearings is matched with difficulty. Variables in speeds and loads range far. To classify the ball bearing offhand as less suited to resist shock or momentary heavy overloads is erroneous. If correctly selected, mounted and applied as recommended for a particular condition, the ball bearing is well adapted for such loads under many circumstances.

Due to the shape and conformity relationship of the load-carrying members in a ball bearing, the stress varies as the cube root of the load; therefore

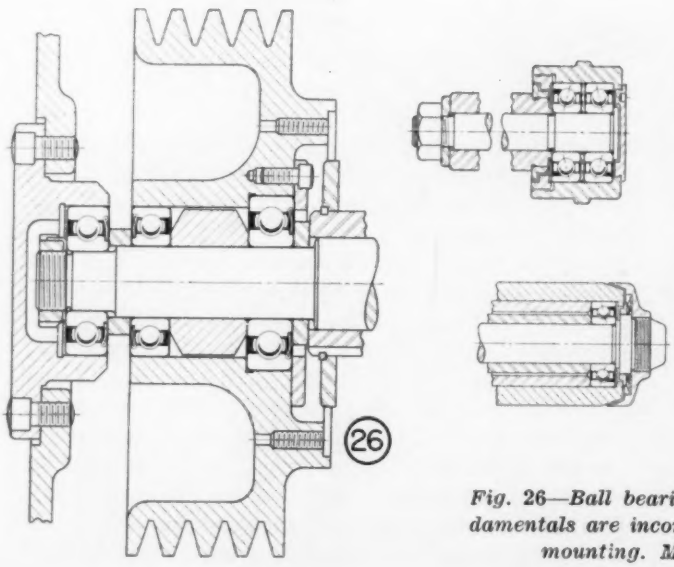


Fig. 26—Ball bearing mounting designs need not be complicated; simple fundamentals are incorporated in this New Departure application for lathe pulley mounting. Machining for pulley bearings is entirely from one side

Fig. 27—Red Ring process gear-shaving machine employs 36 Fafnir ball bearings of 17 types, including eight pairs of super-precision duplex bearings assembled with 75-pound preload

Fig. 28 — This welding dolly for welding steel shells up to 16 feet in diameter incorporates Fafnir LAK ball bearing pillow blocks at 40 points. Equipment was designed and built by McJunkin Supply Co., Charleston, W. Va.

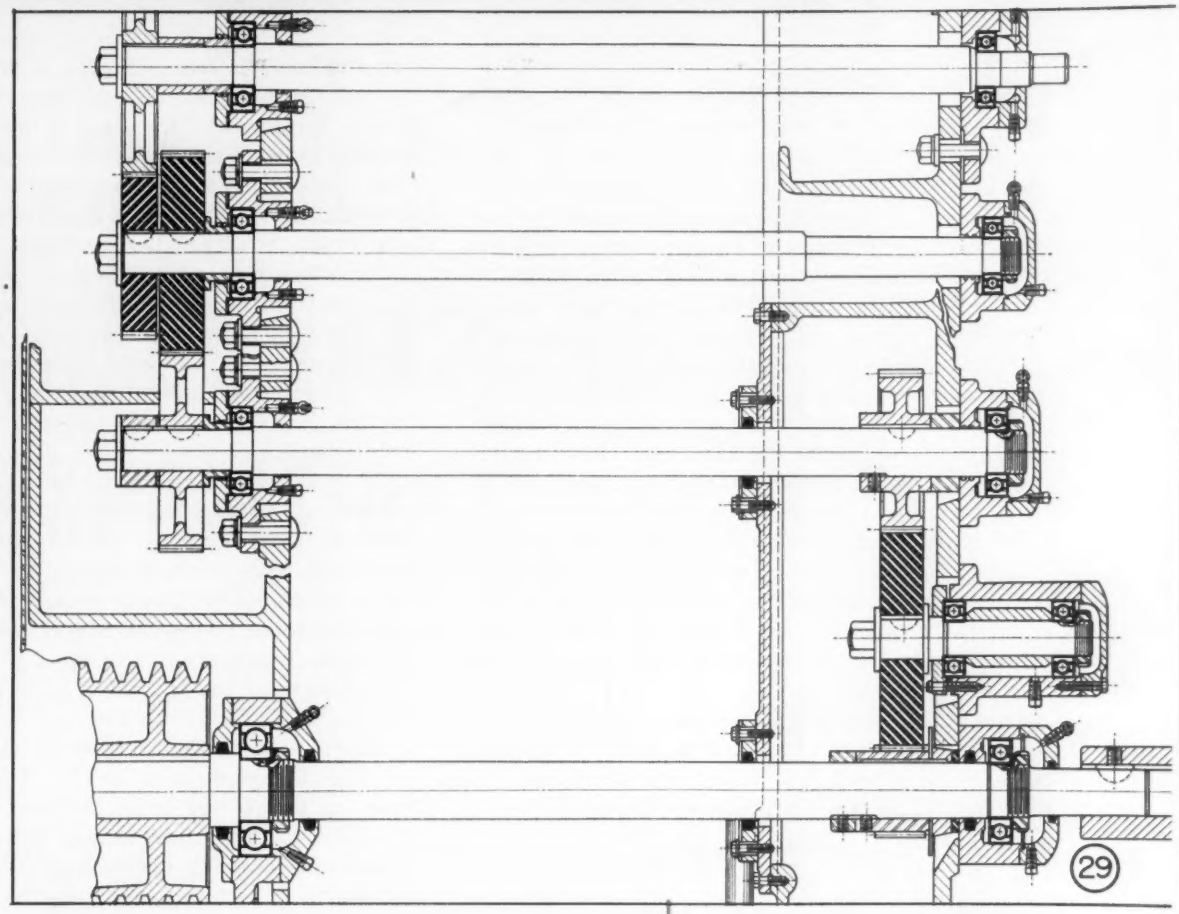


Fig. 29—Ball bearing mounting design for draw box and feed roll drive on a synthetic yarn twister, a new development in textile mill equipment by Whitin Machine Works, Whitinsville, Mass. This unit uses Fafnir bearings at important points

In this fifth part of the current series, the author cites some typical instances in which ball bearings exert a strong influence on the design of high speed industrial equipment

for a load increase of 100 per cent, the stress increase is approximately 27 per cent, much less than in some other types.

Very early in the development of antifriction bearings the possibilities of the ball as a rolling, load-carrying member were appreciated. While cylindrical rollers of fair accuracy were produced with comparative ease, at first there was no machinery available for the production of balls in commercially practical quantities. Fundamental principles behind the theory of the ball bearing were developed through exhaustive scientific research; a thoroughly sound background of scientific principles governs its design.

Load-carrying capacity of a ball bearing is subject to as accurate mathematical determination as is the strength of a steel bridge. In machine operation, high speed is a test not only of the accuracy with which a bearing is assembled, but also of the efficiency of its basic design. In any type of bearing, if fault exists, high speed will inevitably bring it out.

Manufacturing gears to exact measurements required for modern production brought about development of highly specialized techniques and machinery, equipment depending heavily on ball bearings. With its Red Ring gear-finishing equipment, National Broach and Machine Co., Detroit, is one of the leaders in this field. These gear-shaving machines, built with a liberal use of Fafnir ball bearings, serve the very purpose suggested by the name. Machines shave and finish teeth of newly-cut gears and they produce results to tolerances that gear practice not many years ago considered next to impossible.

The process is illustrated in Fig. 27. Rotary tool or cutter is made in the usual form of a helical gear, but with gashes in the teeth at right angles to the cutter axis. The cutter is made to an accuracy of 0.0002-inch in all its principal elements. Cutter is the upper of the two gears meshing, while the lower, or "work" gear, is being shaved to exact dimensions. This "work" gear, mounted on live centers, is driven and guided by the cutter as the shaving operation progresses.

Cutter removes fine, hairline shavings from teeth of the gear being finished, often working at high speeds. This machine is built in several sizes, capable of taking gears up to 120 inches in pitch diameter.

The tools are fast, superbly accurate and economical, qualities which in no small degree can be attributed to the generous use of ball bearings for maintaining rigidity and lowering friction.

Gear finisher illustrated uses no less than 36 Fafnir ball bearings of 17 types and sizes. Prominent in this application are eight pairs of duplex bearings, super-precision products, assembled with 75-pound preload. The purpose of the duplex ball bearing unit, which actually is two single row bearings supplied and used as a unit, is to minimize shaft deflection by providing extreme rigidity, as well as to afford extra-heavy thrust loads to meet severe service. Actually, super-precision ball bearings of the same size would be inadequate, such as in grinding spindles, machine tool spindles, high speed machinery of great accuracy, etc.

Rated radial load capacity of a single 30mm bore ball bearing of this type (a number of this size are used in Red Ring gear shavers) is 3180 pounds at 100 revolutions per minute, 860 pounds at 5000 revolutions per minute. As indicated, they are here used in pairs.

Generally, preloading is necessary only when all radial and axial displacement of a shaft or spindle must be eliminated. Preloading and precision are usually coupled where extreme smoothness of operation and freedom from vibration are necessary. Rigidity is secured by loading the bearings at assembly by forcing the faces of the rings in or out of flushness. Additional loads on the bearing when installed, loads from cutting tools, grinding wheels and so on, then result in such an extremely small additional deflection as to be nil for all practical purposes.

For high efficiency, ball bearing designs and mountings need not be complicated. This is demonstrated by a lathe pulley mounting of New Departure ball bearings, Fig. 26. Simple fundamentals of application are followed; operation at any speeds at which the machine can be run is assured with minimum of maintenance.

In this mounting, narrow spacers at pulley ends extend well beyond shield notches in bearing, giving more efficient closures. Machining for pulley bearings is all from one side and spacer between bearings leaves room for only such grease as will actively lubricate, shaped to maintain grease in good condition and in the bearings.

Engineers of the McJunkin Supply Co., Charleston, W. Va., confronted with the task of procuring equipment to make possible the continuous, economical welding of steel shells up to 16 feet in diameter, found such equipment had to be designed and built for the job at hand. They produced an unusual welding dolly capable of handling shells, 1 to 16 feet in diameter and up to 40 feet long, revolving the cylindrical work from 9 to 90 feet an hour, with a capacity for a 35-ton load. Welding production of shells has been increased about 50 per cent by use of this dolly.

Antifriction ball bearings make up the most vital part of this unique equipment. Early in their planning, McJunkin engineers went to a distributor of antifriction bearings for advice; selection of Fafnir LAK ball bearing pillow blocks for 40 points in the dolly was the result.

As may be noted, Fig. 28, the welding dolly consists of two rows of pulleys, (*Please turn to Page* 100)

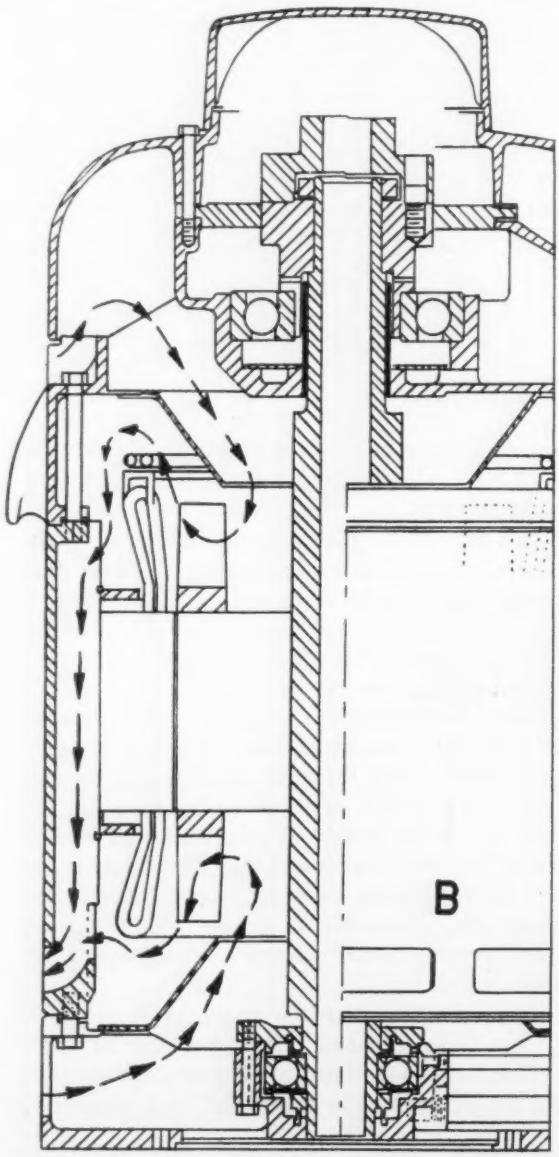
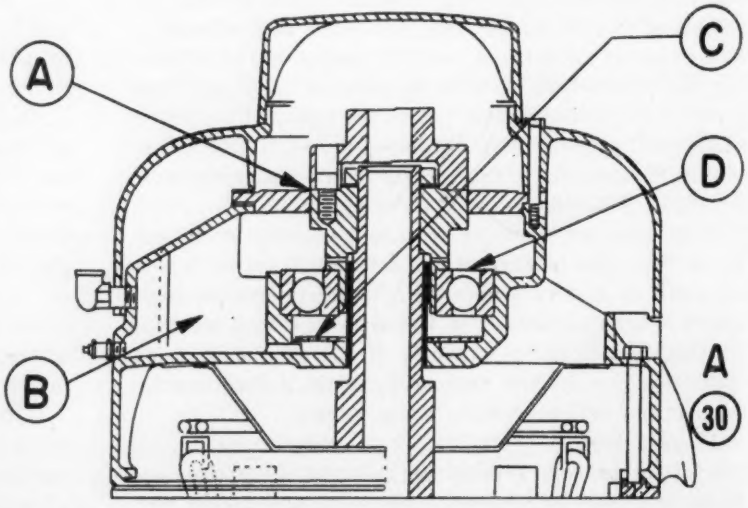


Fig. 30—(A) Thrust and (B) guide bearing details in a deep well turbine pump designed by General Electric Co. Tri-clad vertical motor with system of controlled lubrication overcomes over-heating

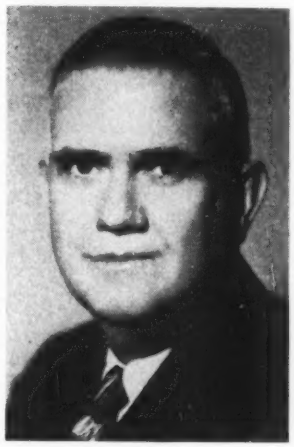


Cost Reduction Emphasized at Second National

MATERIALS HANDLING EXPOSITION

Equipment ranging from pallets to giant fork lift trucks to be shown by more than 150 exhibitors in Cleveland's Public Auditorium, Jan. 12 to 16. Three times larger than last year's event, the exposition includes 18 important discussions by handling experts

Ezra W. Clark, materials handling consultant, Battle Creek, Mich. Keynote speaker at opening session of conference on materials handling



Earl Bunting, president, National Association of Manufacturers. Principal speaker at annual banquet, Wednesday, Jan. 14

INDUSTRY's greatest opening for cost reduction—materials handling—is the basic theme of the second National Materials Handling Exposition in Cleveland, January 12 to 16. Over two dozen handling experts are to speak or otherwise participate at the conference on materials handling which runs concurrently with the exposition in Cleveland's Public Auditorium.

Now that material and labor costs have reached the highest point in history in most industries, one of the few places where cost can be trimmed is in the handling of the materials. With emphasis upon widest appeal from the standpoint of practical operations, discussion subjects for the conference were chosen. Speakers will cover various phases of handling operations as they affect the manufacturer, distributor, jobber and retailer, also devoting time to warehousing and shipping problems.

One of the features of the conference is a demonstration of many types of materials handling equipment. It is conducted by the management and materials handling sections of the American Society of Mechanical Engineers, which called a special national meeting for the purpose. A running commentary explains the machines' functions as they roll on to a platform—to be shown in operation.

Over three times the floor area is being utilized for the exposition this year as was used last year in the first exposition of its kind. The more than 150 exhibits show a wide variety of materials handling equipment and components, including industrial trucks, conveyors, skids, pallets, portable elevators, tractors, hoists and accessories.

According to Edwin J. Heimer, president of Barrett-Cravens Co., Chicago, chairman of the exposition committee, Earl Bunting, president, O'Sullivan Rubber Co., Winchester, Va., and president of the National Association of Manufacturers, will be the principal speaker at the annual banquet on Wednesday, Jan. 14.

The conference, said to be the only major forum for materials handling problems through the year, will run for four days, from Jan. 12 to 15. Speakers and their subjects are as follows:

MONDAY—Jan. 12, Opening Session

Keynote Speaker and Chairman: Ezra W. Clark, materials handling consultant, Battle Creek, Mich. Speakers: J. Leo Cooke, Lehigh Warehouse & Transportation Co., Newark, N. J., "Materials Handling in a Public Warehouse"; R. A. Clark, Detroit Edison Co., Detroit, "Materials Handling Problems in a Public Utility"; W. B. Dalton, Kraft Foods Co., Chicago, "Determining Pallet Sizes".

TUESDAY—Jan. 13, Morning Session

Chairman: W. E. Braithwaite, Division of Simplified Practices, National Bureau of Standards, Department of Commerce, Washington. Speakers: Prof. A. B. Cummins, Western Reserve University, Cleveland, "Determining Economies of Materials Handling Systems"; D. H. Burton, Bakelite Corp., Boundbrook, N. J., "Standardization of Materials Handling Equip-

ment"; Clifford Opshal, Northern Railway Co., and secretary of Northwestern Materials Handling Society, St. Paul, "The Railroad's Materials Handling Problems".

TUESDAY—Jan. 13, Afternoon Session

Chairman: M. W. Potts, Distribution Age. Speakers: R. L. Franning, International Harvester Co., East Moline, Ill., "Integrating the Use of Different Types of Handling Equipment"; William W. Bryant, Westinghouse Electric Co., Jersey City, N. J., "Freight Elevator Applications"; A. C. Farley, Davison Chemical Corp., Baltimore, "Planning a Storeroom Operation".

WEDNESDAY—Jan. 14, Morning Session

Chairman: Norman L. Cahners, Modern Materials Handling. Speakers: Jack Roberts, Ansco Corp., Binghamton, N. Y., "Planning the Pallet System"; Robert C. Brady, Ingersoll Steel Division of Borg Warner Corp., Chicago, "Handling Unusual Shapes"; J. G. Witte, Montgomery, Ward & Co., Chicago, "Planned Packaging for Efficient Handling".

WEDNESDAY—Jan. 14, Afternoon Session

Devoted to American Society of Mechanical Engineers presentation with C. H. Barker Jr., Pallet Sales Corp., New York and secretary, ASME Materials Handling Division, chairman.

WEDNESDAY—Jan. 14, Evening

Annual Banquet. Speaker: Earl Bunting, president, O'Sullivan Rubber Co., and president, National Association of Manufacturers.

THURSDAY—Jan. 15, Morning Session

Chairman: Harry E. Blank Jr., Modern Industry. Speakers: John L. Webb, Pennsylvania Railroad, Philadelphia, "Loss and Damage Prevention Through Improved Materials Handling"; W. Bert Watson, H. J. Heinz Co. of Canada, Leamington, Ont., "Co-ordinating Traffic and Materials Handling"; O. E. Johnson, Kaiser-Frazer Corp., Willow Run, Mich., "The Plant Materials Handling Engineer—His Value, Duties and Authorities".

THURSDAY—Jan. 15, Afternoon Session

Chairman: Harry Carpenter, Flow magazine. Speakers: A. E. Aukens, consulting engineer, Cleveland, "Procedure for Making a Materials Handling Survey"; W. R. Postlewaite, Standard Oil Co. of California, San Francisco, "Materials Handling Factors in Plant Layout"; W. J. Biehl, W. F. Fry & Associates, Chicago, "Time and Motion Techniques in Materials Handling".

During the exposition, motion pictures on various handling subjects are to be exhibited in a "materials handling theatre."

EXHIBITORS

Products marked with an asterisk (*) are being shown for the first time.

Acme Pallet Co. Inc. 339
To Exhibit—Various types of pallets and bin rack pallets
Representatives—A. R. Glassman, chief of engineering; Joseph Kanrich, general manager; Gilbert Robinson

Acme Steel Co. 502
To Exhibit—*Light weight strapping tool mount; *No. 3 Steelstrapper; various methods of strapping, reinforcing
Representatives—J. G. Bucuss, manager, Strapping Division; P. L. Dafoe, manager, Central Division; E. T. Irvine; J. W. Karstens, E. C. Evans; N. L. Anderson; T. P. Schulz; C. G. Moreau

Addison-Semmes Corp. 528
To Exhibit—*Expendable paper pallet
Representatives—J. S. Addison, president; W. T. Donahue, manager, Pallet Division; N. E. Mandernack; R. E. Frase; R. H. Petersen

Aeroquip Corp. 525
To Exhibit—*High pressure hose assemblies with detachable and reusable end fittings, low, medium, medium high and high pressure hose assemblies; self-sealing couplings
Representatives—L. J. Henderson, general sales manager; M. W. Brandau, industrial sales manager; C. Field, sales representative; P. B. Havens, sales representative; R. Cox, sales engineer

American Engineering Co. 432
To Exhibit—Electric hoists and car pullers
Representatives—J. C. Mevius, sales manager; C. A. Boecker, D. W. Herbert, J. L. Taylor, Materials Handling Division

American Pulley Co. 437
To Exhibit—*Barrel cradle, *appliance hand truck, *delivery hand truck, *daisy truck with folding nose
Representatives—E. G. Monigle, advertising manager; E. J. McCorkle, Eastern representative; J. H. Robins, president

Anthony Co. 4
To Exhibit—Display of Anthony Lift-Gate
Representatives—Mark Anthony, export manager; Frank Novotney, sales engineer, Lift-Gate Division; Edward Bellows, general sales department

Arkansas Pallet Corp. 530
To Exhibit—*Style 5 light weight pallet; various other styles of pallets; crates
Representatives—W. R. Jordan, president; G. D. Kelley, secretary

Association of Lift Trucks & Portable Elevators ... 109

Atlantic Distributors, Inc 514

Automatic Transportation Co. 404
To Exhibit—*Skylift giant, *Skylift Brawny fork trucks; standard Skylift fork truck; Transporter; Transtractor; Transtacker
Representatives—Elmer F. Twyman, general manager, Roy L. Wolter, sales manager; J. A. Baldinger, assistant to general manager; Jack Johnson, assistant sales manager

Baker-Raulang Co. 302
To Exhibit—*Type FQH fork truck, three other fork trucks, E3 low lift trucks, CXB crane
Representatives—D. L. Darnell, vice president, sales; G. R Davis, sales manager; M. W. McMillan, advertising and export manager; H. B. Greig, E. E. McVeigh, field engineers; H. B. Seeley, service manager; plus domestic sales representatives

William Bal Corp. 535
To Exhibit—Fiber trucks, mill boxes, tote boxes, tool cases, trunks, sample cases of hard vulcanized fiber
Representatives—Ned Wilson, president; Fred Norman, sales manager

Barber-Greene Co. 520
To Exhibit—*Hopper car unloader, *stock piler-loader, bucket loader
Representatives—M. C. Ham, manager, Merchandise Sales Department; F. J. Merrill, Publicity Department; W. B. Greene, president; H. A. Barber, vice president, E. D. Stearns, sales manager

Barrett-Cravens Co. 322
To Exhibit—*PallettOx hand electric truck for single and double faced pallets; *hand electric tractor; hand and electric lift trucks; lift truck skids, hand and electric portable elevators, die tables, pallet trucks
Representatives—E. J. Heimer, president; A. M. Barrett, vice president, O. M. Lund, general manager; H. M. Donnelly, assistant sales manager; R. L. Hilliard, J. L. Fremgen, R. L. Gregory, sales engineers; C. E. Barnes, vice president, H. C. Morrison, Cleveland representative

Bassick Co. 118
To Exhibit—Floating hub stock absorbing casters, grooved wheel casters for operation on angle iron floor track, position locks, heavy duty all forged casters, industrial wheels
Representatives—A. J. Israel, in charge of exhibit; G. P. Biggs, sales engineer; George Oakley, sales manager; E. H. Leiphart, Detroit; W. K. Meyers, Western Division manager; C. B. Ford, Dayton; W. F. Herold, vice president; W. G. Reycroft, vice president and general sales manager; R. D. Mount, assistant sales manager

Bearing & Transmission Co. 316
To Exhibit—Power-boost conveyor, assembly type conveyor, floor to floor conveyor, conveyor used with infra-red installations, gravity conveyor platform skids, hand trucks
Representatives—R. W. Lashells, T. B. Lashells, A. J. Endrek, R. A. Snyder, P. L. Weinandy, H. F. France, R. P. Seifried, W. B. Stowell, W. F. O'Neall, T. A. Criblez, W. L. Kitting, F. L. Peterman, A. E. Shyrock, B. B. Laube

Better Packages Inc. 519

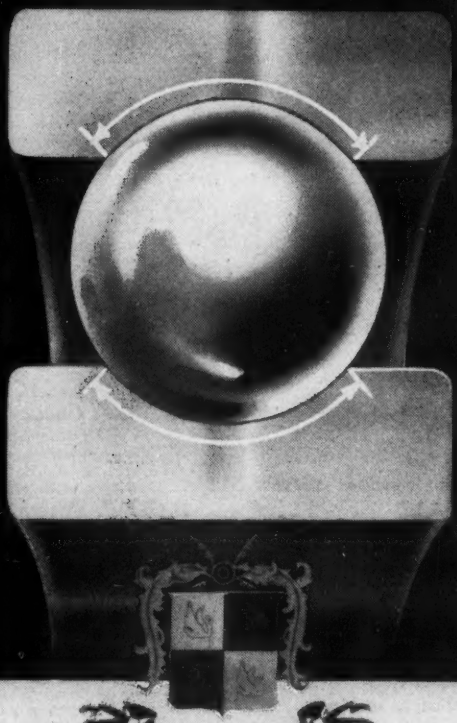
Brainard Steel Div., Sharon Steel Corp. 424

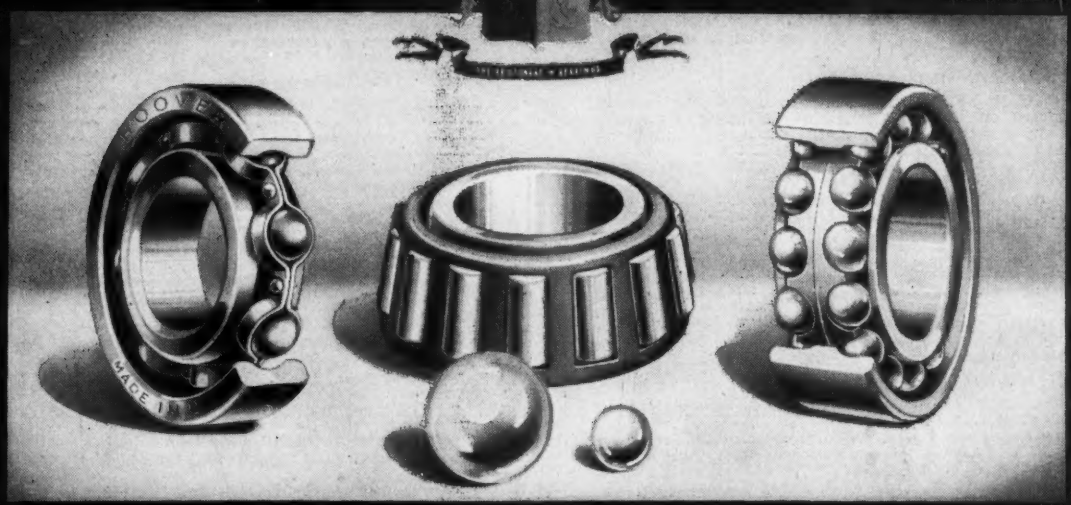
HONED RACEWAYS

AN EXCLUSIVE HOOVER FEATURE

30%

MORE LOAD—LONGER LIFE





BALLS · BALL BEARINGS · ROLLER BEARINGS

HOOVER

BALL AND BEARING COMPANY, ANN ARBOR, MICHIGAN

Brummeler Steel Products Corp. 436

Buda Co. 209

To Exhibit—*2000 pound capacity fork truck; *model FH platform type industrial truck; Chore Boy platform type industrial trucks, tractor and fork truck
Representatives—R. W. Fisher, vice president; W. T. Mulcahy, manager, industrial sales division; R. J. Mulroney, Chore Boy field manager; J. W. Biety, assistant advertising manager; J. M. Padgett, J. R. Reichert, sales representatives

E. W. Buschman Co. 403

To Exhibit—Gravity feed and power driven conveyors of overhead and floor-mounted type, two wheel hand trucks
Representatives—E. W. Buschman, president; V. W. Sicking, secretary; W. E. Todd, manager of sales; A. J. Kaufhold; Otto Svoboda; John Erler

Carlile & Doughty Inc. 7

To Exhibit—*Polystyrene (plastic) telephone batteries, electric industrial truck batteries, diesel batteries
Representatives—F. W. Altrup, manager, Washington office; R. M. Pease, manager, New York office; A. L. Crothers, manager, Central Division; C. F. Gross, manager, Philadelphia Division; J. F. Rittenhouse, engineer, headquarters office; Phil S. Harvey, sales manager

Caster & Floor Truck Manufacturers Assn. 109

Chisholm-Moore Hoist Corp. 526

To Exhibit—*Cyclone model M aluminum alloy hoist, *CM puller, hand chain hoists, electric hoists, I-beam trolleys, Herc-Alloy sling chains
Representatives—D. S. Brisbin, vice president, sales; E. J. Byrne, assistant sales manager; E. N. Turner, district sales manager; C. F. Hill, sales representative

Clark Equipment Co. 407

To Exhibit—*Pul-Pac push-pull attachment for fork trucks; *Hi-Lo Stack high-lift, low-clearance attachment for fork trucks; Clamp-Lift attachment; gas and electric fork lift trucks; industrial towing tractors; special attachments

Cleveland Wire Spring Co. 505

To Exhibit—Shop boxes, factory barrels, factory stools, specialty items and other steel factory handling equipment
Representatives—E. G. Waite, general manager; R. J. Poole, plant and sales manager; F. G. Doerr, salesman

Coffing Hoist Co. 204

To Exhibit—*Hoist jack and midget puller
Representatives—J. R. Coffing, general sales manager; Mike Crowder, Cleveland district sales manager

Colson Corp. 411

Conco Engineering Works 503

Conveyor Repair Service, Inc. 511

Crescent Truck Co. 301

To Exhibit—*Aisle-Saver Palletier; Palletier with pneumatic tires; Palletier with pallet loads
Representatives—C. D. Eiler, president and general manager; R. E. Clark, vice president, sales; J. G. Krause, assistant general manager; H. D. Keefer, service engineer; J. G. Ehrhorn, sales department

Dempster Brothers Inc. 305

To Exhibit—Type LFW model 300 Dempster-Dumpster hoisting unit, mounted on a truck; model 25 industrial Dumpster, mounted on industrial tractor; various sizes and kinds of Dempster-Dumpster detachable bodies
Representatives—T. G. Shea, vice president and sales manager; J. G. Walden, assistant sales manager; H. W. Jones, chief engineer; J. S. Dempster, assistant engineer; C. R. Hawley, Duncan Hawley, M. B. Bryan, J. A. Close, Oscar Twitchell, P. W. Eaton, field engineers

Divine Bros. Co. Inc. 11

To Exhibit—*SteelWate line of pressed steel casters, industrial truck casters, floor protective wheels, demonstration of wheels in operation
Representatives—C. M. Mead, vice president and sales manager; J. D. Blair, chief engineer; W. C. Beddoe, advertising and sales promotion manager

Drake, Startzman, Sheahan, Barclay Inc. 512

Consulting industrial engineers in the field of distribution and materials handling
Representatives—A. B. Drake, president; P. H. Startzman, vice president; J. D. Sheahan, secretary and treasurer; G. N. Collins, P. J. Gilbert, B. W. Hupp, J. H. Leary, E. R. Sims, Kevin McLoughlin, H. W. Underwood, staff engineers

Economy Engineering Co. 121

Thomas A. Edison Inc. 434

To Exhibit—Batteries in demountable boxes, batteries in cradles, Nitebox lighting outfit, test fork, complete filling outfit, relay tester, cutaway and dummy cells
Representatives—W. W. Gould, district manager, Cleveland; J. Heinal Jr.; C. W. Pilling; J. B. Lansdell; E. W. Ahlstrom; G. T. Bradley

Electric Industrial Truck Association 109

Electric Products Co. 501

To Exhibit—Battery chargers for hand lift trucks and motive power trucks
Representatives—G. J. Berry, vice president, sales manager; R. H. Ehret, assistant sales manager; G. J. Doss, district manager, Cleveland; E. G. Schroeder, district manager, Detroit; R. R. Kovach, district manager, Chicago; R. G. Redhead, advertising manager

Electric Storage Battery Co. 115

To Exhibit—Exide Ironclad storage batteries of various sizes and types for all classes of materials handling service
Representatives—W. Van C. Brandt, sales division manager, Philadelphia; W. C. Hooven, Philadelphia; C. J. Moore, C. H. Leet, Pittsburgh; J. B. Clark, New York; K. A. Miller, Chicago; L. M. Gay, Cincinnati; J. H. Miller, Detroit; J. M. Vanston, St. Louis

Elizabeth Iron Works 123

To Exhibit—*Master medium hand truck, *Multi-Stak pallet stacker, One man bridge ramp, Star light weight hand truck ramp, all-purpose truck, Diamond torque hook
Representatives—I. L. Chanenson, sales manager; Harry Diamond, Leonard Kates, Harrion Barnes

Elwell-Parker Electric Co. 426

To Exhibit—3000 and 4000 pound capacity telescoping fork trucks, low lift platform truck with crane attachment, 3000 pound capacity crane, *pallet retriever
Representatives—W. A. Meddick, sales manager; C. B. Cook, vice president and export manager; J. W. Coulton, assistant sales manager; G. H. Brown, assistant export manager, F. Botch; C. J. Burgy; W. D. Parker, F. J. Avery; F. H. Gill; W. L. Parlon; O. R. Heidenrich; F. B. Haldy; R. F. Crawford

Equipment Manufacturing Inc. 13

Fab-Weld Co. 329

Fairbanks Co. 201

To Exhibit—Two-wheel hand trucks, four-wheel platform trucks, special purpose hand and platform trucks, industrial truck casters, rubber tired wheels
Representatives—A. L. Naylor, executive vice president; R. G. MacBeth, sales promotion manager; J. S. Hanson, administrative assistant; C. L. Haslup, manager, regional sales; E. T. Flanagan, manager, New York sales department; A. T. Wendler, manager, Pittsburgh branch; S. L. Hancock Jr., manager, Rome factory; A. W. Hoogs, W. J. McVey, N. F. Unmuth, R. W. Nickerson, W. T. Rogers, R. A. Fournier, J. C. Valentine, H. D. Tenney, C. G. Long, H. J. Knapp, M. W. Chalverus, H. M. Sims, K. McClean, L. Compton, J. J. Crowley, S. G. Redfield, J. Chandler, J. E. Bates, E. W. Stephenson, S. H. Ingraham, J. H. Leindecker, J. R. Donoghue, W. B. Crane, H. L. Jones, W. H. Peate

Faultless Caster Corp. 208

To Exhibit—Various types of casters
Representatives—F. H. Doerr, E. L. Isham, E. F. Koch, C. O. Buck, F. W. Barney, W. T. Sutherland, representatives; C. B. Noelting, vice president

Harry J. Ferguson Co. Inc. 6

General Box Co. 8

To Exhibit—Generalift pallets, wirebound boxes and crates, corrugated containers, cleated corrugated and stitched panel crates
Representatives—J. F. Ferguson, vice president and general sales manager; Ralph Cunningham, vice president and Detroit manager; F. H. Dicke, W. G. Vance, Alan Irwin, C. C. Bush, salesmen; M. J. Watkins, advertising manager

General Electric Co. 337

To Exhibit—*Small battery charging motor generator set, standard motor-generator set
Representatives—J. H. Lotridge, O. A. Tilton, A. J. Lee

Geneva Metal Wheel Co. 205

To Exhibit—*Molded-on solid rubber tired cast wheels, rubber tired disk wheels, casing and tube tires and puncture proof cushing tires, steel tired and cast rim steel spoke wheels, semi-steel cast wheels, pressed-on solid rubber tired spoke wheel
Representatives—H. A. Carter, president; R. E. Sawyer, assistant sales manager, H. A. Ford, R. B. Winchester, sales engineers

A. J. Gerrard & Co. 114

To Exhibit—Steel strapping tools, steel strapping and accessories, with emphasis on strapping for palletization
Representatives—Henry Wenk, vice president; Clarence McCarter, sales department; D. F. Downing, executive vice president

Gerrard Steel Strapping Co. 104

To Exhibit—Hand operated strapping machines, semi-automatic handling equipment
Representatives—H. M. Reed, E. B. Kovats, E. P. Ribet, Adolf Larsen

Globe Hoist Co. ..... 1[illegible]

To Exhibit—Fully detailed one-half scale model of hydraulic industrial loading lift, operated by full scale, self contained pump unit
Representatives—F. W. Swanson Jr., vice president and general manager; H. D. Smith, vice president and director of sales; L. E. Porter, manager, Industrial Division; E. C. Keller, Eastern sales assistant, Industrial Division

Gould Storage Battery Corp. 309

J. W. Greer Co. 113

To Exhibit—Multi-Tier cooling conveyor model
Representatives—D. S. Greer, vice president, sales; C. R. Becker, sales engineer; Stanley Piwowarski, project engineer; James Hebard, assistant chief engineer

Harnischfeger Corp. 3

To Exhibit—*Working model of alternating current crane control; Zip-Lift and Hevi-Lift hoists in operation

W. F. Hebard & Co. 616

Hertner Electric Co. 506

J. R. Hooper Co. 326

CMP

THINSTEEL

PRECISION COLD ROLLED STRIP

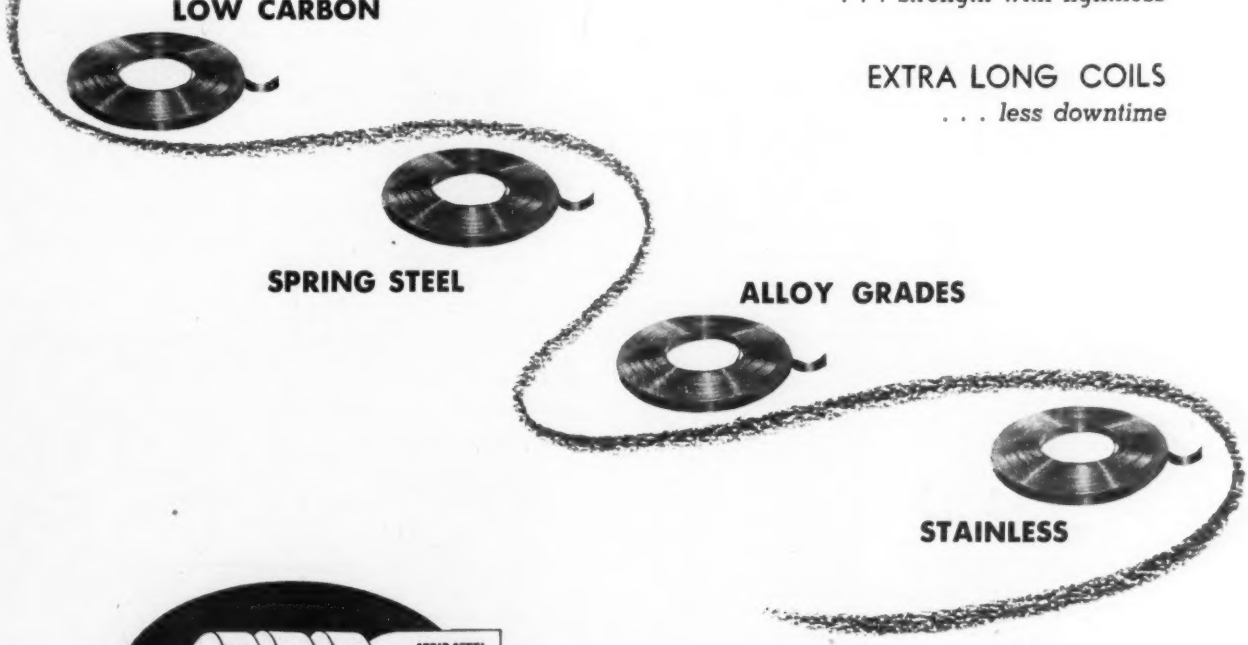
with *Production Boosting* ADVANTAGES

WIDE RANGE OF PHYSICALS AND ANALYSES
. . . tailored for your products

EXTREMELY CLOSE TOLERANCES
. . . more parts per ton

GAUGES THIN AS .001
. . . strength with lightness

EXTRA LONG COILS
. . . less downtime



C M P PRECISION COLD ROLLED STRIP STEEL

Cold Metal Products co.
YOUNGSTOWN 1, OHIO

NEW YORK • CHICAGO • DETROIT • ST. LOUIS • BUFFALO • INDIANAPOLIS • LOS ANGELES • SAN FRANCISCO

Frank G. Hough Co. 304

To Exhibit—Model HA Payloader, Model HF Payloader ¼-scale operating model of Model HL-A Payloader
Representatives—C. E. Killebrew, sales manager; Bob Howe, Dudley Burnett, district representatives

Hyster Co. 319

To Exhibit—*Several special attachments for these trucks, Straddle truck, Karry Krane, Model 150 fork lift truck, Model 75 lift truck, several 2000 and 4000 pound units
Representatives—Hal White, show manager, E. G. Swigert, president; Frank Ross, vice president; Eugene Caldwell, vice president, Phil Hill, general sales manager; Ray Roland, Western divisional sales manager; C. H. Collier Jr., Eastern divisional sales manager; A. Zwald, chief engineer; Milton Smith, supervising lift truck engineer; Dar Johnson, sales promotion manager

Industrial Pallet Co. Inc. 540

To Exhibit—Hardwood pallets
Representatives—J. S. Haithwaite, president; F. E. Hauschild, treasurer; F. A. Randel, assistant sales manager; F. J. Tracy, Paul T. Dalrymple, sales

Industrial Washing Machine Corp. 538

To Exhibit—Stak pallet, portable steel trucks
Representatives—H. M. Sadwith, vice president; J. L. Van Horn, sales engineer

Insley Mfg. Corp. 314

To Exhibit—½-cubic yard clamshell crane, model K-12
Representatives—L. R. Russell, chief engineer; A. L. Perkins, advertising agent; C. J. Klee, service engineer; F. B. Ray, vice president

Ironbound Box & Lumber Co. 311

Island Equipment Corp. 618

To Exhibit—Bottle and can unscrambler, bottle, jar and can conveyor, rotary accumulating table, unscrambling table, belt conveyor, various types of gravity conveyors
Representatives—Denny Bohn, Donald Stiles, Arthur Haar, M. Van Billiard, sales engineers; Sam Eckhaus, chief engineer; J. W. Stiles, general manager, Nicholas Gross, service manager

Joyce-Cridland Co. 543-B

Keen Manufacturing Corp. 532

Lanham Co. 12

To Exhibit—Re-Nu top skid platforms, sectional bins, Rollaway Skids, Yale jacks
Representatives—C. T. Lanham, president; P. B. Lanham Jr., secretary-treasurer; R. S. Piatt, sales

Lawrence Pallet Exchange 529

G. B. Lewis Co. 545

To Exhibit—Various styles of wood, steel reinforced containers
Representatives—H. Riedemann, sales manager, Container Division; Steve Parks, general sales manager; F. H. Shuman, Cleveland representative

Lewis-Shepard Products Inc. 612

To Exhibit—*Electric fork truck with hydraulic rotating paper roll attachment; *JackTractor and JackStacker trucks; Handy Hoister with PL winch; three other electric fork trucks of various capacities, one with chisel forks; three JackLift and two FootLift lift trucks; telescopic stacker; skid platform; OM floor truck; Merry-Go-Round power fork truck; remote control JackLift
Representatives—A. L. Lewis, president; F. J. Shepard, treasurer; L. E. Nivling, general sales manager; H. M. Palmer, sales manager, power fork trucks and JackLift power models; J. P. Ascher, sales manager, electric fork trucks; R. D. Jones, convention manager

Lyon-Raymond Corp 328

To Exhibit—*Hydraulic sheet feeding table; *single stroke lift truck; *tote pan lift truck; skid platform lift truck; steamlined hydraulic lift truck; portable hydraulic elevating table; hydraulic high lift truck
Representatives—G. G. Raymond, president and treasurer; G. G. Raymond Jr., secretary; Ivan S. Bailey, sales promotion manager; members of sales, engineering and production staffs

Magnesium Co. of America 410

To Exhibit—*Magnesium barrel skids; *magnesium grain shovels; magnesium dockboards; magnesium hand trucks
Representatives—E. S. Christiansen, president; M. L. Abel, vice president; J. W. Copeland, general sales manager; R. G. Robey, assistant sales manager; W. P. Sigler, Eastern sales manager; Charles Martin, Western sales; D. E. Harvey, John Harris, sales, Detroit office; G. C. Murray, sales, Utica office; V. J. Daniels, production engineering; D. R. Merriman, advertising manager; R. L. McKee, dealer representative; W. R. Brown, G. L. Ramer, E. J. Schneiderhan, M. Roeda, Chicago sales force; R. R. O'Donnell, J. C. Pollack, J. Eastman, engineers

Mansaver Industries Inc. 513

Marsh Stencil Machine Co. 103

Material Handling Institute Inc. 109

Booth turned over institute chapters for solicitation of members, etc.

Material Handling & Power Transmission 313

Material Movement Industries Inc. 116

To Exhibit—Tote-All Zephyr lightweight bulk material conveyor, Tote-All packaged material conveyor, under-car unloader, bulk conveyor for press room use
Representative—Horton Conrad, president

Mathews Conveyer Co. 308

To Exhibit—*General purpose belt conveyor; two portable belt conveyors; portable roller and wheel conveyor of steel and aluminum; curves, supports and accessories
Representatives—J. S. Bowater, manager, Merchandise Sales Division; A. M. Burt, engineer, Merchandise Sales Division

May-Fran Engineering Inc. 423

To Exhibit—*Sheet lifter, *steel belt conveyor, *Little Hustler Jr. conveyor, Little Hustler portable and adjustable conveyor
Representatives—E. W. Franz, secretary-treasurer; G. H. Meyfarth Jr., vice president; G. F. McCrory, sales manager; C. F. Conrad, chief engineer; C. R. Meyfarth, purchasing agent

McGrath St. Paul Co. 534

To Exhibit—Nesting skid
Representative—H. W. King, sales manager

Meese Inc. 112

To Exhibit—*Freighter and barrel type all aluminum two wheel hand truck; canvas baskets, hampers and trucks; Shamrock Commander collapsible folding steel cart
Representatives—E. W. Meese, C. B. Stoltz

Mercury Mfg. Co. 609

To Exhibit—Trackless Train tractor-trailer equipment; Banty 3-wheel gasoline tractor; 6-wheel pneumatic tired Super-Husky gasoline tractor; Tug electric tractor; standard caster steer trailers with automatic couplers; Jeep fork truck; platform type lift truck; mechanical "strong arm" device on a center control fork truck; 3-ton high lift platform truck with *die pusher assembly
Representatives—L. J. Kline, executive vice president, Chicago; C. W. Henkle, vice president and general manager, Chicago; P. K. McCullough, production manager, Chicago; O. T. Henkle Jr., assistant general manager, Chicago; H. E. Milz, chief engineer, Chicago; C. Hibbeler, Eastern district manager, New York; A. E. Radcliff, Cleveland district representative; A. W. Leet, Michigan district representative; L. F. Meissner Jr., Pittsburgh district representative

Merrill Brothers 438

To Exhibit—Plate clamp, twin drum lifter, drum opener, drop forging samples
Representatives—W. S. Sickles, Val Murtha, sales department

Mobilift 336

Monroe Auto Equipment Co. 312

To Exhibit—Eight way 40 x 48-inch all steel pallets; drop bottom skid box
Representatives—B. D. McIntyre, president; W. D. McIntyre, vice president; C. S. McIntyre, vice president, sales; J. E. Bickel, parts and accessories division sales manager; E. N. Moore, advertising manager; Harold McPike, Frank Stoner, materials handling division

Morrison Co. 306

Motor Generator Corp. 536

To Exhibit—Automatic industrial truck battery chargers for all types and sizes of batteries, in one, two and four battery circuits
Representatives—D. W. Baker, sales manager; H. E. Royer, assistant to sales manager; Robert Holder, sales representative; G. O. Williams, J. D. Sampson, engineers

Moto-Truc Co. 318

National Metal Edge Box 110

National Pallet Corp. 523

To Exhibit—Various types of pallets, collapsible shipping containers, collapsible pack pallet
Representatives—Harry I. Miller, president; L. S. Miller, secretary and treasurer

National Wooden Box Association 10

To Exhibit—Standard types of construction of 2, 4 and 8-way pallets, various types of wooden boxes
Representatives—W. H. Sardo, Jr., secretary; F. B. Kimball, chief engineer, Packaging Service Corp.

Nook & O'Neill Inc. 212

Nutting Truck & Caster Co. 402

Ohio Equipment Co. Inc. 122

To Exhibit—Line of materials handling machinery for intraplant transportation
Representatives—E. M. Abramson, president; A. P. Carstensen, vice president; Sam Zipp, Charles Yarham, sales representatives; E. J. Werner, Akron office manager; S. J. Herring, Akron office sales representative; Clarence Weidner, James Cunningham, Sales and Service Department; James Kile, sales representative; C. Baden, A. Burgess, L. Johnson, Cleveland sales office

Orangeville Mfg. Co. 320

To Exhibit—Hand propelled two and four-wheel hand trucks with metal, rubber and pneumatic wheels
Representatives—L. C. Conner, partner; J. C. Conner; R. C. Megargell

Otis Elevator Co. 524

To Exhibit—Pow-R-Truck freight elevators designed for loading by industrial trucks
Representatives—John Ockun, H. C. Lynch, sales representatives, Cleveland office.

Ozark Pallet Co. 517

Pallets Inc. 1

Pallet Sales Corp. 428

Pallet Systems Inc. 307
To Exhibit—Wood pallets, steel pallets, magnesium dockboards, collapsible pallet boxes (wood)
Representatives—I. L. Carmichael, president; W. J. Pastrick

Patron Transmission Co. 533
To Exhibit—*Prefabricated, all-aluminum conveyors
Representatives—Irving Patron, J. P. Hardman, chief engineer

Penton Publishing Co. 206

Pittsburgh Steel Products Co. 415
To Exhibit—Eight-way steel wire pallets; palletized container, the Cargotainer
Representatives—P. A. Mungan, Philadelphia; H. J. Venger, Pittsburgh; K. S. Hartung, Chicago; H. H. Robinson, Chicago; D. W. Kelsey, Detroit; R. P. Marshall, Columbus; H. D. Stone, Pittsburgh

Powell Pressed Steel Co. 431
To Exhibit—Pallets, platforms, boxes
Representatives—W. J. Powell, president, H. L. Powell, assistant vice president; A. G. Knowles, manager of sales

Power Crane & Shovel Association 332
To Exhibit—Photographic display of machines manufactured by member companies
Representatives—Each of the member companies will have representatives in this booth. Member companies: Bay City Shovels Inc., Browning Crane & Shovel Co., Bucyrus-Erie Co., Byers Machine Co., Findlay Division of Gar Wood Industries Inc., Harnischfeger Corp., Koehring Co., Lima Shovel & Crane Division of Lima-Hamilton Corp., Link-Belt Speeder Corp., Manitowoc Engineering Works, Marion Power Shovel Co., Osgood Co., Thew Shovel Co., Unit Crane & Shovel Corp., Wayne Crane Division of American Steel Dredge Co. Inc.

Production Aids Inc. 607
To Exhibit—*Automatic pallet loader, demonstrated in operation
Representatives—L. A. Dahl, president, T. W. Tull, secretary and treasurer; J. K. Bruce, vice president, engineering; J. S. Garraway, assistant to president, sales; Don Gumpertz, electronics engineer; F. M. Proctor, divisional sales manager

Rack Engineering Co. 106

Rapids-Standard Co. Inc. 610
To Exhibit—*Floor-Veyor Jr. powered belt conveyor; *Poweroll horizontal belt conveyor; *lightweight Rapid-Wheel gravity conveyor of aluminum; *Stevedore Jr. power belt conveyor; Rapid-Wheel and Rapid-Roller gravity conveyors; Rapid-Flame hardened steel forged casters; Warehouser floor trucks; Wheel-Ezy hand trucks
Representatives—L. C. Backart, president and sales manager; J. R. Sebastian, general manager; G. R. Brockway, assistant sales manager

Ready-Power Co. 401
To Exhibit—*Model Z Ready-Power unit for motorized hand lift trucks, Model H and J Ready-Power units, Model R-4-M-15 magnet charger
Representatives—A. Huneck, service engineer, Cleveland district; G. W. Frampton, manager, Pittsburgh district; F. E. Hayden, manager, Chicago district; Durward Morgan, manager, Birmingham district, L. H. Tanney, manager, Detroit district; R. W. Pelto, assistant sales manager; A. R. Smith, vice president of sales

Re-Bo Mfg. Co. Inc. 518
To Exhibit—Skid platforms, floor trucks, pallets
Representatives—J. R. Katzman, R. I. Kahl

Revolvator Co. 203
To Exhibit—*Go-Getter power lift hand truck in 4000 and 6000 pound capacities and in various lengths and heights; portable elevators; hand lift trucks
Representatives—H. S. Germond III, Paul Germond

Richards-Wilcox Mfg. Co. 412
To Exhibit—Full size No. 2035 Zig-Zag continuous power conveyor
Representatives—A. B. Trefethen, New York sales representative, H. P. O'Brien, Chicago sales representative, P. M. Hassler, design engineer, E. R. Ransom, manager, Over-Way Division

Robbins & Myers Inc. 429

Ross Carrier Co. 605
To Exhibit—Pneumatic tired lift trucks and straddle carriers
Representatives—D. H. Ross, treasurer; A. P. Ross, vice president; A. L. Bilven, Eastern sales manager; C. G. Kennedy, sales department; L. A. DePolis, sales department

Rotary Lift Co. 14
To Exhibit—Levelators, lumber lifts, tilt lifts, freight elevators, factory truck lifts, model of Oildraulic Levelator
Representatives—Hugh Allan, president; Jack Sanders, manager, Elevator Division; J. B. Harrison, chief engineer; H. L. Lowry, Cleveland, H. J. Burlington Jr., New York, R. C. Campbell, Buffalo, W. W. Eberhart, Chicago, Jack Burch, Chicago, division managers

Sabin Machine Co. 120

Saginaw Products Corp. 542
To Exhibit—*Pneumatic casters, *chain hoist trolleys, multi-duty pneumatic wheels, industrial casters, steel and rubber tired wheels, conveyor trolleys, conveyor rolls, conveyor rollers and bearings, trolley wheels
Representatives—G. K. Mulholland, president; P. J. Zehnder, assistant sales manager; E. L. Lee, sales engineer; C. A. Hagarty, sales department; G. E. Johnson, Chicago district manager; C. C. McKenna, Detroit district manager; Vince Basnik, Cleveland district manager

Schwitzer-Cummins Co. 325
To Exhibit—*Pallet transporter; power unit or tractor; four models of Load Dispatcher materials handling truck of 3000 pound capacity: fixed platform; hydraulic lift type (with three different lowered heights)
Representatives—J. A. McDaniel, sales manager, Materials Handling Division

Service Caster & Truck Corp. 333
To Exhibit—*1948 Motowlift fork lift truck, *Leverlift double faced pallet truck, *Motowlift with air-expanding forks, casters, Push-E-Z floor truck, Hustler dolly, Liftable, single stroke lift truck, electric hydraulic lifter, double faced pallet lift truck, greasing leveler
Representatives—E. C. Hamm, president, A. Graham Reid, manager, Motowlift Division; L. L. Reed, vice president, manufacturing; E. C. Goodall, sales manager, Howard Beers, manager, New York sales office, William Paul, manager, Somerville Divisional sales office, Ray Wilkins, field engineer; John Meldon, Motowlift engineer; William Blommel, assistant manager, Motowlift Division; Garrett Gething, advertising and sales promotion manager; Fred Johnson, superintendent of industrial operations; L. D. Huffman, research and development engineer; Frank Dow, production manager; William Race, Seymour Raynor, assistant sales managers; Richard Hamm, assistant sales manager, Motowlift Division

Sherman Paper Products Corp. 541
To Exhibit—*Tube-Tainer cutter roll dispenser for use with corrugated tubing; *Corroflex Tube-Tainer cushioned shipping containers in continuous rolls; Corroflex flexible corrugated packing material
Representatives—George Beale, John Bode, C. W. Turbayne, John Feaver, A. J. Bradley, packaging engineers; George Sherman, president; George E. Stucke, general sales manager; H. Aubrey, assistant sales manager, Industrial Division; Paul Thompson, advertising and sales promotion manager, E. W. Preston, sales manager, Industrial Division; D. S. Roberts, director of operations; J. J. Connoughton, plant director

Signode Steel Strapping Co. 427
To Exhibit—*One-piece retaining doors; *retaining strips; *model SE sealing tool for box strap; *type ST-29 stretcher; tensional steel strapping tools; accessories
Representatives—J. W. Leslie, president; J. W. Leslie Jr., in charge of research operations; J. S. Gorman, vice president and general sales manager; J. M. Moon, sales manager; C. J. DaCosta, Cleveland district manager; J. W. Angell, manager, marketing operations; L. S. Hunt, advertising manager; F. S. Anderson, manager of sales promotion

Silent Hoist & Crane Co. Inc. 330

Sisalkraft Co. 510
To Exhibit—Fibreen, used for wrapping machinery, industrial equipment, etc.
Representatives—J. E. Harvey, vice president, sales; H. H. Deputy, in charge of industrial sales; F. J. Koehn, local representative

Skarnes Engineering & Supply Co. 504
To Exhibit—*Rol-A-Lift for 1500-pound loads; models M-4 and M-6 Rol-A-Lift of 4000 and 6000 pound capacities
Representatives—R. F. Skarnes, owner; W. G. Burry, partner, W. N. Lind, salesman

Smith Power Transmission Co. 602
To Exhibit—*New type of conveyor belting; Flexoid electronic speed control, Flexoid wire cloth belt conveyor; Flexoid V-belt matching machine; Flexoid overhead conveyor; canvas and rubber belting; hand trucks, accordian conveyor; Olson roller conveyor; skids; Market Forge load carriers
Representatives—S. C. Smith, S. C. Smith III, Joseph Lakner, Richard Walters, Walter Meiers, Frank Ingham, Richard Ferren, Chester Lis, Richard Heck and Nathaniel Warshaw of Market Forge Products

Speedways Conveyors Inc. 202

Standard Conveyor Co. 508
To Exhibit—Mechanical conveyors and equipment
Representatives—Ed. Boberg, John Donahower, Frank Janssen, R. E. Cummings, John Weir

Stanley Works 527
To Exhibit—Ace strapping tool, Ever-Safe steel strapping, Colorgraph strapping, carloading band, Uni-Tie system for pallet and skid shipments
Representatives—F. E. Koerner, district manager, Cleveland; G. E. O'Brien, district manager, Chicago; R. D. Thomas, Pittsburgh District representative; W. H. Cook, Southern Ohio representative; B. T. Taylor, special representative

STEEL Magazine 206

Steel-Parts Mfg. Co. 317

Sterling Bolt Co. 111

Stratton Equipment Co. 614

Thermoid Co. 604
To Exhibit—Brake linings and other friction materials, conveyor belting, industrial wheels, hose
Representatives—A. F. Matheis, sales promotion manager; W. H. Overman, manager, friction materials; Ray Lambert, district manager

Thomas Truck & Caster Co. 2
To Exhibit—Industrial trailers, safety wagon, platform trucks, Jak-Tung trucks, barrel, keg and pry trucks, industrial wheels and casters
Representatives—J. F. Thomas, president and general manager; L. B. Miller, secretary-treasurer; R. P. Moore, sales manager;

Parke Anderson, Jack Henderson, Freeman Simpson, sales department; J. W. Hutchison, assistant secretary; William Guild, chief engineer; William Wulf, superintendent

Towmotor Corp. 611

To Exhibit—Towmotor fork lift trucks, truck accessories such as revolving carriage, side shifter, unloader and upender
Representatives—C. E. Smith, executive vice president; A. H. Roth, advertising and sales promotion manager; D. H. Cissna, Gordon Winters, L. F. Body, W. L. Utley, E. A. Buck, R. G. Lucas, Carl Meyer, sales department; Dan Wessman, service manager; Ray Wiggers, advertising manager

Traffic Service Corp. 105

Transitier Truck Co. 210

To Exhibit—Models 147 and 247 lift trucks in both standard 9 foot lift and 60 inch lift for van loading
Representatives—G. M. Ede, sales manager; George Butler, president, Butler Products Co., distributor; Ralph Butler, sales manager; E. W. Redd, sales and service manager

Truck-Man Inc. 321

To Exhibit—*Platform utility truck, model D elevating platform truck
Representatives—T. B. Funk, president; Walter Mayer, general manager; Milt. Anderson, auditor; Robert Hoyt, chief engineer; Ray Dunlap, vice president; W. S. Butterfield, secretary-treasurer; John Flansburgh, production manager

Truscon Steel Co. 617

To Exhibit—Materials handling boxes, platforms, pallets
Representatives—W. M. Whalen, general manager of sales, Pressed Steel Division, Cleveland; J. H. Ayre, L. S. Todd, assistants, Cleveland

Union Metal Mfg. Co. 324

To Exhibit—*Aluminum alloy one-piece double corrugated skid platform; aluminum alloy and magnesium alloy knock-down box on skid platforms; steel, double corrugated skid platform; steel fork crane box (fork roll-over dump type); steel detachable tiering box; steel pallet racks
Representatives—L. W. Shea, manager, materials handling sales; L. E. Collins, materials handling sales; E. V. Bailey, order and service supervisor; E. A. Brady, production manager; Cyril Clark, development engineer; K. C. Dorland, sales supervisor, A. S. Fromm, advertising manager

Unistrut Products Co. 210

Waterman Engineering Co. 543-A

To Exhibit—*Solenoid valve for lift truck applications; *three-way four-way selector valve with one handle operation; hydraulic flow regulators, solenoid valves, control valves, hydraulic fuses
Representatives—William Waterman, president; L. K. Billings, treasurer; J. R. McGuire, sales manager; H. A. Hedland, chief engineer

Jervis B. Webb Co. 601

To Exhibit—*Power and Free overhead conveyor, displayed in operation
Representatives—J. B. Webb, president; C. A. Sink, vice president; J. C. Webb, treasurer; E. W. McCaul, sales manager; M. F. Carroll, Cleveland representative

West Bend Equipment Corp. 323

To Exhibit—Two and four wheel hand trucks, narrow and wide model lift trucks, skid and nesting boxes, hydraulic pallet truck, single frame lift truck, hydraulic portable elevator, telescopic winding drum portable elevator
Representatives—C. E. Klumb, secretary, C. J. Marks, production manager; P. A. Kessler, engineer

Westinghouse Electric Corp. 613

To Exhibit—No. 613 industrial truck charger, *selenium hand truck charger
Representatives—D. W. McGill, manager, Machinery Electrification Section, Industry Sales Department, East Pittsburgh; V. J. Kropf, Machinery Electrification Section, East Pittsburgh; T. C. Finnell, manager, Rectox Section, Motor Division, Buffalo; R. B. Freeman, Rectox Section, Buffalo; J. E. Piest, rectifier engineer, Motor Division, Buffalo

Whiting Corp. 327

To Exhibit—*One ton, single phase, 110-volt electric chain hoist, full scale, small, light cranes; monorail systems; various sizes of hoists
Representatives—B. A. Hanner, manager, Light Hoist Division; F. Glass, C. Teeple, salesmen; R. W. Roberts, E. Dyrcz, engineers; R. M. Russell, assistant advertising manager

Whitney Chain & Mfg. Co. 539

To Exhibit—Line of power transmission equipment and conveyor chain
Representatives—R. W. Johnson, general sales manager; R. G. Atkins, advertising manager; R. G. Holmes, D. D. Williams, F. W. Borrow, district sales managers; C. H. Erbacher, field office salesman

Wirebound Box Manufacturers Association 507

To Exhibit—Container construction details, illustrations of assembly operations, operation of miniature Conbur tester
Representatives—F. F. Gallivan (in charge), F. H. Fisher, Miles Duwe, J. H. Singer, G. Thompson, B. E. Davis, H. C. Bullard, F. W. Ross, W. Eger, T. Shea

Yale & Towne Mfg. Co. 125

To Exhibit—*New line of Load King electric wire rope hoists; *Load King dormant platform scale; *nontilting fork Worksaver; *40-foot crane truck; *light duty center control fork truck; hand trucks, battery powered
Representatives—Sam Gibb, general sales manager; Milt Peck, manager, Electric Truck Division; Glen Tipton, manager, Hand Lift Truck Division; Carl Hedner, manager, Hoist Division; Jim Young, manager, Scale Division; Abe Abramson, Andy Carstensen Sr., Fran Vogel, Cleveland representatives; Sam Keller, Detroit; Art Dobler, Chicago; Gordon Ricker, Pittsburgh; Bill McGreevy, in charge of exhibit

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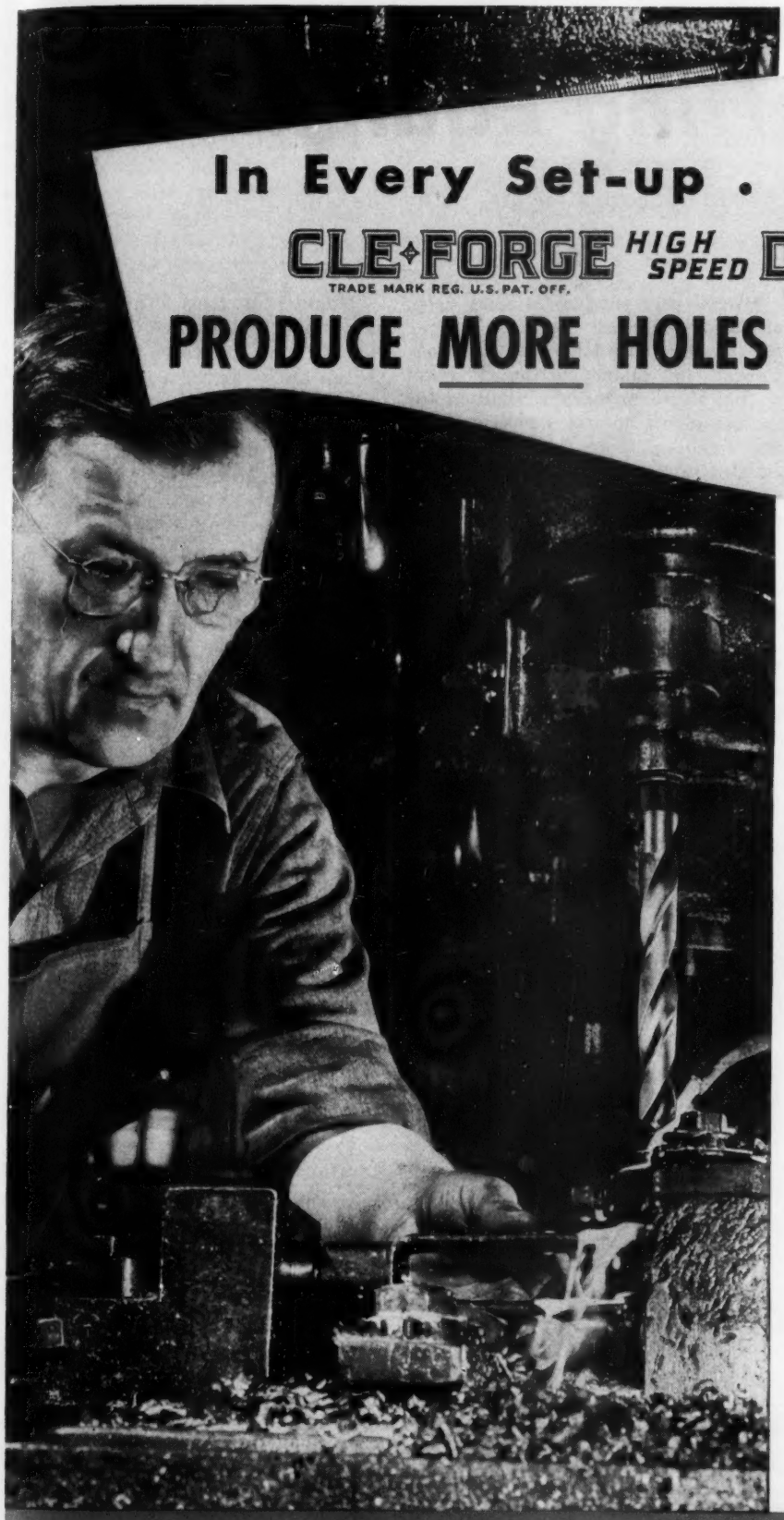

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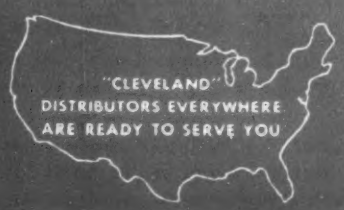
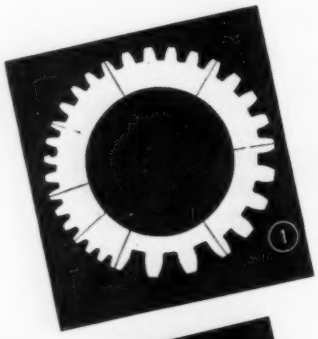


Gear Cutting Equipment

. . . found applicable for uses outside its original field



MANY uses outside the gear field are being found for machines originally developed by Michigan Tool Co., Detroit, for faster cutting of gear teeth. These include, in addition to various gears, splines, cams, sprockets, ratchets, toothed parts, sliding clutches and special forms. A few typical parts are illustrated diagrammatically here with the tool shapes used to cut them. It will be noticed that the individual tools have the exact form of the section removed from a part to produce the desired form.

Action of the so-called Shear Speed, is comparable to that of a modern high-speed internal broaching machine, since this machine is said to be capable of cutting almost any external shape that can be produced internally by broaching.

Fig. 1—Representative sizes of pitches of gear teeth for which the machine is recommended. These range from five to 12 pitch. A form exactly the same shape as shown here could be cut, all pitches at once

Fig. 2—Sliding clutch hub having three sets of teeth with different pitches which is currently being produced on the equipment shown in Fig. 3

Fig. 3—Cutting a shoulder gear. Uncut blank is shown on the arbor, finished blank on the switch box and two more unfinished blanks on the tray at the right. With 33 teeth of 7 pitch, full cutting cycle is 33 seconds (1 second per tooth)

Number of tools depends on the number of spaces, slots or forms to be cut. In some cases the tools may be all alike—as for a gear. Or they may be all different, as for a special cam; or some of them may be alike and some different, as for a clutch hub. Tool spacing may be even or may vary between tools as desired. All tools are form-relieved to maintain correct form after sharpening, the latter operation being performed by simple surface grinding.

Although all tools are fed radially into the work at the same time and to an equal amount, the feed gradually changes from the heavy initial cut to the light finishing cut, by virtue of a feed control cam in the machine. This cam is designed to equalize the amount of metal removal during the infeed by this gradual reduction from the roughing to the final finishing. Thus, the feed may be as much as 0.008-inch at the start and as little as 0.0002-inch on the finishing strokes.

Cutting Time Reduced

This not only gives better finish and more rapid "hogging" but balances the amount of metal removal on each stroke to achieve maximum overall utilization of the machine capacity and thereby reduces overall cutting time to a minimum. Rate of change of feed is controlled by a ratchet mechanism, the pawl of which is adjustable so as to move the cam an amount equal to either one or two teeth on the wheel for each reciprocation of the work. Tool life and tool costs, according to field reports, compare favorably with other methods of cutting.

These machines are now available to produce parts all the way from extremely small diameters up to 10 inches outside diameter. On the whole, the greatest time savings are effected on the larger parts; there being so little cutting time on which to save time on extremely small gears, etc. However, according to the company, many of the small parts can be produced on the machine which could not be produced as easily on other types of machines. This is true particularly where out-

side diameter is not uniform and where eccentric shapes are involved.

These machines are being used both on cast iron, where negative tool rakes are sometimes employed, and also on steel parts. Maximum face width which can be handled is about 2¾ inches. Frequently several pieces can be machined simultaneously by stacking them, provided that their combined thickness does not exceed this dimension.

Exact amount of cutting time of course varies with amount of metal to be removed. The rate of speed with which the machine produces parts naturally has an effect on frequency of shut-downs for tool changes. While the machine is equipped with jacks, etc., for quick tool changes, time required still is in the neighborhood of 20 to 25 minutes. Where only a few tools are used in the tool head, usually the simplest way is to grind the tools to gage height and slip them into the head without removing it from the machine.

This is possible since the tools do not have to be positioned as they are self-locating in the head. Where a cosiderable number of tools have to be changed and sharpened, best practice generally is to remove the cutter head assembly and insert a new assembly, sending the entire head to the tool room for grinding of individual blades. With automatic clamping, etc., two machines can usually be operated by one man, who loads and unloads one while the other is cutting.

As far as gears and splines are concerned, the machine is recommended, for those of five-pitch to 12-pitch inclusive.

Hydraulic Oil Handbook Covers Oil Properties

Composed of seven chapters containing information of value to users of hydraulic oils, a new 48-page handbook on hydraulic oils is offered by E. F. Houghton & Co., Philadelphia 33. Tables, diagrams and illustrations are included in the book which is said to completely cover specifications, importance of properties not included in the usual specifications, additives and qualities a good hydraulic oil should possess.

A chapter on "trouble shooting" is devoted to listing specific troubles and their remedies. Concluding chapters describe services and products of the company.

Chart Permits Rapid X-Ray Film Calculation

Rapid calculation of exposures of x-ray films of varying characteristics of speed, contrast and graininess is possible with the new conversion chart for x-ray diffractionists, prepared by Kodak Research Laboratories of Eastman Kodak Co., Rochester, N. Y. The chart provides conversion factors by which exposure for any of five types of film may be computed easily. These factors have been determined at the extremely low photographic densities commonly used for diffraction and are presented for three common target materials, chromium, copper and molybdenum.

Also supplied by the chart are factors which indicate the increase in relative film speed obtained by 8 minutes development in comparison with normal development of 5 minutes, permitting a decrease in exposure time by as much as 15 per cent, depending upon the film.

Behavior of Metal Surfaces

. . . Discussed at French metallurgical society meeting

RESULTS of research into the primary causes of corrosion and developments of preventive measures were detailed at the annual meeting of Societe Francaise de Metallurgie in Paris recently. Many aspects of the behavior of metal surfaces were discussed at the meeting, held in conjunction with the Commission Technique des Etats de Surface. The first three days of the week-long meeting were devoted to papers and discussions on the above subjects, while the last two days were devoted to subjects of interest to the iron and steel industry generally.

About 100 papers were presented at the various sessions, in addition to four lectures. Dr. U. R. Evans of Cambridge, England, in the opening lecture entitled "Theoretical Aspects of Corrosion and Oxidation", said that, in the light of present knowledge, there are two classes of reactions on metals: Those which develop a film on the surface of the metal, in which case the reaction slows down with time; and those that do not develop a film. In the latter cases the oxide is soluble and the speed of corrosion is practically constant. It was his opinion that a good protective film is one that has a high electric resistance.

State of a metal surface generally plays a very important part in the superficial properties and even in the mass properties of the metal, according to M. G. Chaudron, professor at the Faculty of Science, Paris, in his lecture, "Surface Behavior and Actual Physico-Chemical Properties of Metals". This state of the surface is itself a function of the surrounding atmosphere and of all the past history, thermic and mechanical, of the alloy.

Mechanical polishing tends, by an activation of the surface of the metal to facilitate the reactions with the surrounding atmosphere, said Mr. Chaudron. It causes the formation of a chemical skin of a varying degree of complexity. Many physical and physico-chemical characteristics depend upon the nature of this skin, he concluded.

In the lecture, "The Influence on the Tensile Strength of Solids of Liquids That Do Not Have A Noticeable Chemical Reaction", Professor C. Benedicks, director of the Metallographic Institute of Stockholm, stated that it is known that the formation of cracks in a solid can be facilitated by the presence of liquid that wets the solid without showing any chemical action. The effect of the liquid is not always weakening but sometimes may be strengthening. He referred to some ruptures that had occurred in shaft keys in a Swedish power house, saying that, in his opinion, they were due to the presence of condensed water.

Various industrial tests cited by the lecturer showed that the resistance to repeated shocks of a stainless steel with 13 per cent chromium was reduced by 40 to 60 per cent when the pieces had been wetted by water instead of oil. Tests on steel similar to that used in the Swedish power house showed at 40 to 50 per cent reduction in tensile strength.

Tests conducted on hardened carbon steel reportedly showed a reduction of 14 per cent when the pieces were wetted, but with the use of a 10 per cent solution of NaOH, the strength was increased by 15 per cent. Zinc wetted with mercury showed a strength reduction up to 67 to 70 per cent. The speaker concluded that experimental research has given definite proof that the presence of a liquid considerably influences the tensile strength of a metal where cracks can develop owing to stresses.

Activated charcoal appears to be the best selective absorption for ferrous sulphate in neutral and acid solutions. Author deals with method which lends itself to the problem of waste pickle liquor disposal in the steel and allied industries

ABSORPTION STUDIES WITH

Waste Pickle Liquor

By J. SEIBERLICH
Engineering Experiment Station
University of New Hampshire
Durham, N. H.

MANY methods proposed for the disposal or utilization of waste pickle liquor are based on chemical precipitation methods. Some of these processes were discussed by F. Sierp,[1] F. Heinrich,[2] W. Hodge,[3] and R. D. Hoak[9]. In the following investigation the problem was approached from a different direction. The process of selective absorption was chosen and its application for separating ferrous sulphate from its excess of water and sulphuric acid was studied.

W. Mecklenburg[4] has explained the great absorptivity of activated charcoals by calculating the surfaces of cubes of various sizes. In Table I the great areas involved are demonstrated.

A study of the literature on selective absorption reveals numerous attempts to absorb heavy metals from solutions on activated or highly absorptive materials, but little could be found so far to apply this method for the regeneration of waste pickle liquor.

McKee and Horton[5] describe a process by which gold and silver is removed from their solutions by means of alkaline activated charcoals. A similar method was studied by A. Quartaroli[6] for the precipitating of gold and silver from dilute solutions.

On the other hand, E. J. Miller[7] has investigated the absorption of salt solutions and acids on charcoal. He has studied for instance the absorption of hydrochloric acid, sodium sulphate, potassium sulphate, iron chloride, etc. These experiments point especially to the influence of the

Table I—Calculation of Cube Surfaces

Amount of cubes	Side length of single cube (cm.)	Amount or atoms in single cube	Surface of all cubes together
1	1	10^{23}	6 cm^2
10^3	10^{-1}	10^{20}	6.10 cm^2
10^6	10^{-2}	10^{17}	6.10^2 cm^2
10^9	10^{-3}	10^{14}	6.10^3 cm^2
10^{15}	10^{-5}	10^8	6.10^5 cm^2=6.10 m^2
10^{21}	10^{-7}	10^2	6.10^7 cm^2=$6.10^3 m^2$

Table II—Absorption Experiments Using 20 gms. Charcoal and 20% $FESO_4$ Solution

Charcoal No.	Mesh	pH	Neut. $FeSO_4$ Solution Added (cc)	$FeSO_4$ (gms)	Wt. Residual $FeSO_4$	% $FeSO_4$ Recovered	% $FeSO_4$ Absorbed	3% Acid $FeSO_4$ Added (cc)	$FeSO_4$ (gms)	Wt. Residual $FeSO_4$	% $FeSO_4$ Recovered	% $FeSO_4$ Absorbed	Original pH	Final pH
1[1]	10	4.50	90	20.20		discarded		90	20.6		discarded			
2	16	4.50	80	17.95	5.216	29.50	70.50	70	15.96	4.891	30.70	69.30		
3	20	4.70	80	17.95	3.060	17.05	82.95	100	22.8	9.780	42.80	57.20	0.60	1.05
4	40	4.70	83	18.63	3.186	17.10	82.90	100	22.8	4.067	17.80	82.20	0.60	0.88
5	60	4.65	100	22.42	1.992	8.88	91.12	100	22.8	2.916	12.25	87.75	0.60	1.06
6	100	4.80	90	20.20	0.543	2.48	97.52	100	22.8	3.312	14.50	85.50	0.60	1.21
7	100	4.70	90	20.20	1.819	9.00	91.00	100	22.8	2.951	12.95	87.05	0.60	1.11
8[2]		7.50	50	11.21	1.665	14.84	85.16	100	22.8	16.741	73.30	26.70	0.90	1.59
9[3]		8.75	50	11.21	1.895	16.90	83.10	Not used						
11[4]								100	22.8	12.871	55.60	44.40	0.90	1.29
12[3]								100	22.8	15.104	66.3	33.70	0.90	0.87

No. 10 on separate sheet.
(1) Quinnebaug Corp.
(2) Binney & Smith Co.
(3) Animal Charcoal Cons. Chem. Ind., Inc.
(4) Darco S-51.

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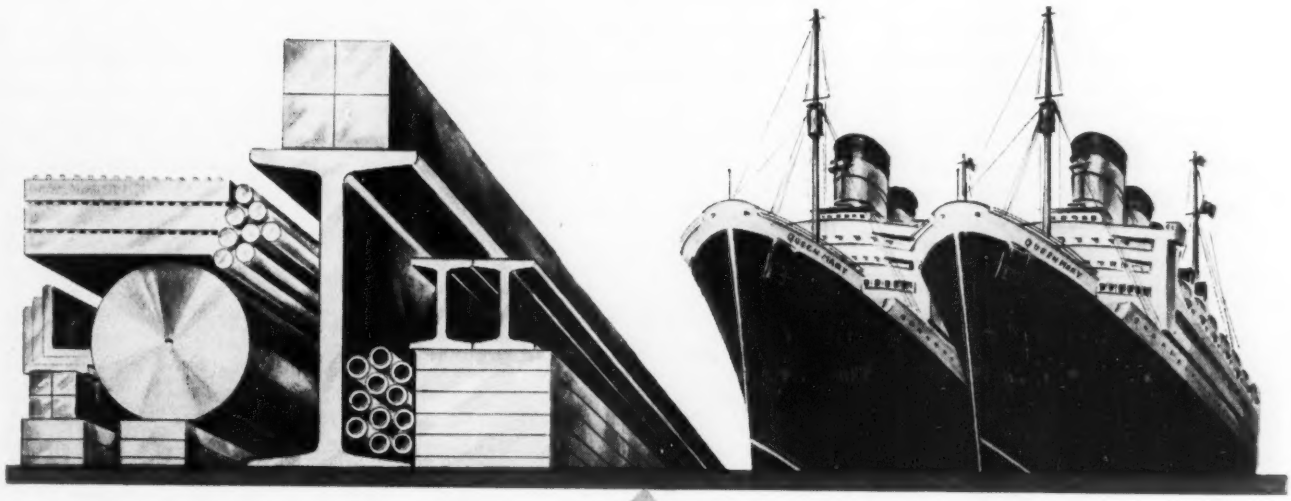

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pH on the absorption qualities of charcoal. As a result of the experiments, it was found that activated charcoal prepared from animal residues, due to a great content of basic salts, is less suitable for absorption of inorganic salts. Absorption of acid solutions is therefore explained as being due to neutralization of the basic salts present in animal charcoal. A similar view was explained by S. Caspe (8).

This fact is important when dealing with waste pickle liquor. Up until recently the absorption phenomena were only investigated using pure salt solutions. Applying this problem to pickle liquor, it must be kept in mind that in the ferrous sulphate solution there is always present a certain amount of sulphuric acid. Absorption, therefore, of ferrous sulphate from pickle liquor should be studied in the presence of sulphuric acid. The absorption procedure of ferrous sulphate seems to be definitely connected and dependent on the acid concentration present in the sample. In other words, it seems possible from results obtained that not only ferrous sulphate will be absorbed but also a certain amount of the sulphuric acid and possibly other trace metals present in waste pickle liquor.

If the absorption of ferrous sulphate from waste pickle liquor is possible, then many methods of the use of the absorbed material may be already at hand or new ones may be employed. On the other hand, the waste pickle liquor, now purified, may easily be disposed of without great expense or contamination of waterways or sewers.

Experimental approach to this problem is described and the results are tabulated and discussed, as follows.

Absorption tests were carried out with the following absorptive materials:

1. Wood charcoal, the Quinnebaug Corp., Southbridge, Mass.
2. Wood charcoal, Binney & Smith Co., New York.
3. Animal charcoal, Consolidated Chemical Industries, Inc., New York.
4. Petrol coke.
5. Peat, Center Barnstead, N. H.
6. Columbia activated carbon, Carbide and Carbon Corp., New York.
7. Darco S-51 activated carbon, Darco Corp., New York.
8. Silica prepared from sodium silicate (S-brand), Philadelphia Quartz Co.
9. Coal dust, U.N.H. power plant, Durham, N. H. Analysis (uncorrected for moisture): volatile matter, 15.87 per cent; ash, 26.20 per cent.

In order to study the absorption qualities of the charcoal, first, neutral ferrous sulphate solutions were used. Afterwards, waste pickle liquor samples were made up in the laboratory, and finally, the method was applied to genuine waste pickle liquor obtained from steel plants.

Solutions used were as follows:

1. 20 per cent $FeSO_4$ in distilled H_2O.
2. 20 per cent $FeSO_4$, 3 per cent H_2SO_4 in distilled H_2O.
3. Waste pickle liquor: Wean Engineering Co., Warren, O.
4. Waste pickle liquor, American Rolling Mill Co., Butler, Pa.

Analyses of pickle liquors was as follows:

	Wean	Armco
Solids, per cent	9.44	24.60
Density	1.057	1.224
pH	0.87	0.14
Normality (H_2SO_4)	0.796	1.400

Wood charcoal samples which were received in large pieces were ground until they were small enough to be sifted, using a mechanical shaker. The following sizes were retained: 10, 16, 20, 40, 60, 80, 100, and all over 100 mesh. Petrol coke was treated in the same manner.

Next, the pH of the water extracts of the various charcoals and petrol coke was taken. Two gram samples of each were boiled in 100 cc of distilled water for about 15 minutes. The pH of the supernatant solution was then taken (with a Leeds & Northrup pH meter). The results follow:

Sample	pH
Wood charcoal ..... 10 mesh	4.5
Wood charcoal ..... 16 mesh	4.5
Wood charcoal ..... 20 mesh	4.7
Wood charcoal ..... 40 mesh	4.7
Wood charcoal ..... 60 mesh	4.7
Wood charcoal ..... 100 mesh	4.8
Wood charcoal ..... Over 100 mesh	4.7
Binney & Smith Co., wood charcoal	7.5
Cons. Chem. Ind. Co., Animal charcoal sample, 50 x 90	8.75
Petrol coke	7.87

From these results it may be concluded that the pH depends much on the source and preparation of the charcoal.

Peat for the experiments was prepared by grinding it in a Haug crusher. The fine material when dried and broken up was ready for use in the absorption experiments.

Coal dust was sifted in the same manner as the charcoal. The volatile carbon content was determined by heating a weighed sample in a Skidmore crucible and weighing the residue. The ash content was determined by heating samples in iron crucibles

Table III—Absorption Experiments

Using Columbia Activated Carbon and 20% $FeSO_4$, 3% H_2SO_4 Solution

Mesh of Charcoal	Wt. sample (gms)	Solution added (cc)	Original pH	Final pH	Wt. residual $FeSO_4$ (gms)	% $FeSO_4$ recovered	% $FeSO_4$ absorbed
100 and over 100..	20	50	0.9	2.05	5.859	51.30	48.70
80	10	25	0.9	1.77	2.716	46.75	53.25
60	20	50	0.9	1.72	5.401	47.30	52.70
40	20	50	0.9	1.99	6.029	52.60	47.40
Using Petrol Coke and 20% $FeSO_4$, 3% H_2SO_4							
over 100....	20	50	0.49	1.33	15.289	72.45	27.55
100	20	100	0.90	0.907	8.270	66.90	33.10
80	20	50	0.49	1.09	7.450	65.20	34.80
60	20	50	0.49	1.12	8.118	71.05	28.95
40	20	50	0.49	1.13	8.102	71.00	29.00

Table IV—Absorption Tests Using Commercial Pickle Liquors and Wood Charcoal

Charcoal mesh	Wt. sample (gms)	Volume solution (cc)	pH filtrate	Wt. Fe SO_4 recovered (gms)	% $FeSO_4$ recovered	% $FeSO_4$ absorbed
Wean Pickle Liquor						
60	20	150	0.75	6.55	43.40	56.60
100	20	100	1.0	1.75	17.35	82.65
Armco Pickle Liquor						
60	20	100	0.50	15.0	49.70	50.30
100	20	100	0.46	19.65	65.40	34.60

Table V—Absorption Experiments

Using Silica, Acid $FeSO_4$ Solution and Commercial Pickle Liquors

Solution used	Wt. sample (gms)	Volume solution (cc)	pH filtrate	Wt. solid recovered (gms)	% $FeSO_4$ recovered	% $FeSO_4$ absorbed
Acid $FeSO_4$	20	100	1.40	7.60	35.50	64.50
Acid $FeSO_4$	15	50	1.70	4.40	41.10	58.90
Wean P.L.	15	50	1.25	4.75	94.00	6.00
Armco P.L.	15	50	1.15	12.45	82.50	17.50
Using Activated Coal Dust and Acid $FeSO_4$ Solution						
Sample Mesh						
80	15	50*	0.75	8.7	81.5	18.5
100	20	50*	2.38	4.30	40.3	59.7
40	20	50*	2.15	3.90	36.6	63.4

* Poured through 6 times.

Table VI—Leaching Experiments on Wood Charcoal Residues

	From Experiments Using—						Neutral solution	Acid solution
	20% $FeSO_4$ Solution			20% $FeSO_4$ 3% H_2SO_4 Solution				
Charcoal #	5	6	7	5	6	7	7	7
Wt. sample (gms) ..	15	15	15	15	15	15	15	20
Wt. of absorbed $FeSO_4$ in sample (gm) ..	7.60	7.47	7.19	7.50	7.51	7.50	7.19	9.6
Vol. H_2O								
1st L.	50	50	50	50	60	50	100	200
2nd L.	50	25	25	50	50	50	100	200
3rd L.	25	25	25	50	50	50	...	...
% $FeSO_4$ removed								
1st L.	3.95	20.80	15.30	5.34	4.67	19.35	55.60	78.20
2nd L.	23.10	28.80	34.10	34.00	24.00	23.35	5.56	8.34
3rd L.	3.29	12.71	7.65	20.00	20.63	10.68	...	...
Total removed	30.34	62.31	57.05	59.34	49.30	53.68	61.16	86.54

and weighing the ash residue. These results are uncorrected for moisture content.

It was necessary to activate the coal before using it for the absorption experiments. The shifted samples were heated in a metal container which was insulated with asbestos and provided with an opening for escaping gases. Heating was continued until all the volatile carbon had been driven off.

The silica was prepared in the following manner: A solution of sodium silicate was diluted with distilled water to 3 liters and acidified with hydrochloric acid (HCl) to precipitate silica (SiO_2). The resulting gel was worked through a 20-mesh sieve, mixed with about 4 liters of distilled water. After several days of standing, the supernatant water was decanted, and the rest of the water replaced with denatured alcohol. The silica was air dried, with slow heating to evaporate any residual alcohol. Next, it was further dried by heating in an electric oven at 100° C over night. The final drying process took place in an electric furnace at 400° C for a period of approximately 4 hours. Finally, the sodium chloride (NaCl) was washed out by boiling several times with distilled water. The silica after drying was then ready for use in the absorption experiments.

Commercial pickle liquors were analyzed for solids content ($FeSO_4$) by evaporating a measured volume of each liquor.

1. 20 grams of the charcoal were mixed with a slight excess of a 20 per cent ferrous sulphate ($FeSO_4$) solution and heated to 50° to 60° C. This mixture was then filtered.

At first, an attempt was made to filter the mixture on a glass funnel with filter paper. This was impractical for two reasons: First, the filter paper absorbed enough of the ferrous sulphate ($FeSO_4$) to make the results inaccurate; second, when the filtrate again was poured through the charcoal it came into contact with only a small portion of the charcoal due to its irregular distribution in the funnel.

The next filter used was a Zimmerman-Reinhardt tube equipped with a Gooch crucible and glass wool as a filter. This was also inefficient, since again the filtered solution, upon being poured through, reached only a part of the charcoal. Furthermore, the glass wool was too coarse to be used as a filter.

The Zimmerman-Reinhardt tube was replaced by a straight glass tube arranged as a tower of about 3.5 centimeters diameter and 60 centimeters long. The Gooch was retained, with glass wool as a filter. The setup proved to be satisfactory, and was used in all the absorption experiments.

When the filtrate had been poured through the charcoal in the tower six times to insure maximum absorption, the filtrate was evaporated and the dried solid ferrous sulphate ($FeSO_4$) residue was weighed in order to calculate the per cent absorption.

It is to be noted that in using plain $FeSO_4$ solution, a fresh solution must be made up each day as Fe_2O_3 precipitates on standing, making results inaccurate.

2. Tests using the solution of 20 per cent ferrous sulphate ($FeSO_4$) with 3 per cent sulphuric acid were run in the manner just described, with a few exceptions. It was not necessary to make up fresh acidified solution each day. The pH of the solution was taken, and the pH's of the filtrates were taken before they were evaporated. Results are compiled in Tables II to IV.

3. The tests with silica were carried out in the same manner as were those with charcoal. Either a 15 or 20 gram sample of silica was used; and 50 or 100 cubic centimeters of solutions 20 per cent ferrous sulphate ($FeSO_4$), 3 per cent water were used correspondingly. For results see Table V.

4. The absorptivity of the activated coal prepared in the laboratory was tested with the acid iron sulphate ($FeSO_4$) solution in the same fashion as were the charcoals.

5. A sample of soft coal received from Portsmouth, N. H. was activated in a Skidmore crucible. 20 grams of this coal were saturated with 50 cubic centimeters of Armco pickle liquor, filtered in the absorption tower, and the filtrate poured through again, until, as in previous experiments, the liquor had been through the coal six times. The filtrate was evaporated and the residue dried. Iron sulphate absorbed amounted to 16 per cent and iron sulphate recovered to 84 per cent.

6. Similar absorption tests were run on the charcoals mentioned and the silica, using the commercial pickle liquors, and results are shown in Table III. Wean pickle liquor, Armco pickle liquor as well as charcoals at 60, 100, and over 100 mesh, and silica were used.

Extraction Experiments (See Table VI): Once the absorption properties of the various materials had been studied, it was desirable to investigate the possibility of extracting the iron sulphate ($FeSO_4$) from the charcoal in concentrated solution by extraction.

The three charcoals giving the best absorption and samples of silica were treated with hot distilled water.

Extraction experiments were rather unsuccessful, for when leaching three times with small amounts of water only about 50 per cent of the $FeSO_4$ was extracted. More $FeSO_4$ is extracted when larger volumes of water are used, but this does result in less concentrated solutions as desired for economy reasons.

Finally, ferrous hydroxide was examined to see if it may be used as an absorbing medium for the $FeSO_4$. The ferrous hydroxide was precipitated with sodium hydroxide (NaOH) from 100 grams of a 20 per cent $FeSO_4$ solution in distilled water. The precipitate was filtered and washed until free of alkali. Then the precipitated ferrous hydroxide was saturated with 100 grams of 20 per cent $FeSO_4$ solution. The mixture was allowed to stand over night and was then filtered. Analysis of the filtrate follows:

	Per cent
$FeSO_4$ recovered	52.5
$FeSO_4$ absorbed	47.5

From the results obtained in these experiments, the following conclusions may be drawn:

1. Results seem to indicate that activated materials are capable of absorbing ferrous sulphate from its solution.

2. Experiments indicate that activated carbon, activated silica gel, ferrous hydroxide and activated coal absorb in various degrees ferrous sulphate from neutral or acid solution.

3. Activated charcoal possesses the best selective absorption for ferrous sulphate in neutral and acid solutions. Experiments indicate that 90 per cent of the solution was absorbed by the equivalent of activated charcoal.

4. Activated silica, prepared in the laboratory, shows promising results. However, the degree of activation is important before definite conclusions may be drawn.

5. Activated coal gave less encouraging results. Of course, only three samples were tested, but it seems that the method of activating carbon from coal or coal residues is open to improvements before a definite opinion may be given on its absorbing qualities.

6. From these results it may be concluded that carbon and noncarbon containing activated materials may be adapted for the separation of ferrous sulphate from neutral and acid solutions.

7. Colloidal ferrous hydroxide also shows an absorption of 50 per cent of neutral ferrous sulphate solution.

8. It was found that most of the absorbed ferrous sulphate may be removed from the activated material

by extraction with hot water in concentrations high enough to be useful for electrolysis and other chemical transformations.

9. Results further point to the possibility to apply this method to the utilization problem of waste pickle liquor in steel mills and also to waste liquors in other industries.

10. Results finally indicate that a certain amount of sulphuric acid is also absorbed with the ferrous sulphate, but that a larger part remains in solution.

The authors are grateful to Mr. Daniel Eppelsheimer as the sponsor of this investigation, for the invaluable suggestions which he has continuously given to us in order to bring this investigation to successful results.

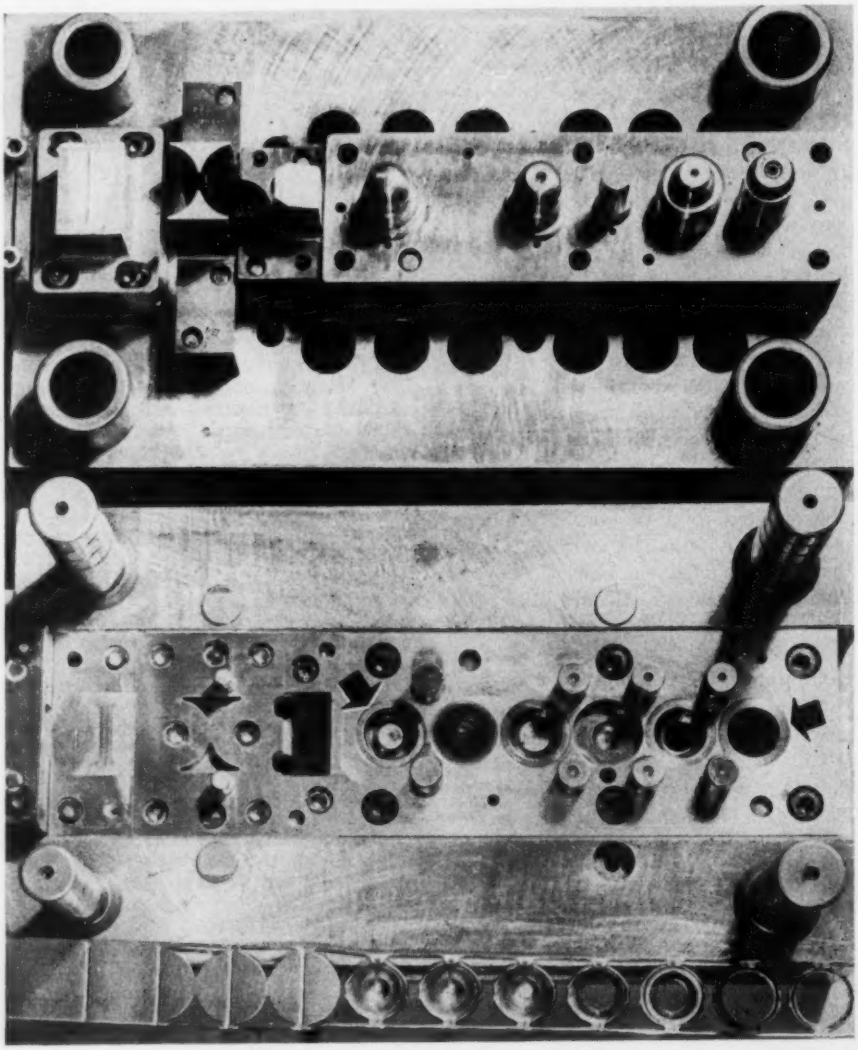
(1) *Stahl und Eisen*, vol. 58, 1938, p. 494.
(2) *Stahl und Eisen*, vol. 57, 1937, p. 757. Also vol. 58, 1939, p. 647.
(3) *Industrial Engineering Chemistry*, vol. 34, 1939, p. 1364.
(4) Z. Agnew, Ch., vol. 37, 1924, pp. 873-896.
(5) *Chemical Industrial Engineer*, vol. 32, p. 13.
(6) Ann. Chim. Appl., vol. 31, 1940, p. 47.
(7) Colloid Synysos. Minog. vol. 6.
(8) *American Journal of Pharmacy*, July 1942, pp. 262-266.
(9) *Industrial Engineering Chemistry*, vol. 39, 1947, pp. 614-618.

DIE MATERIAL CHANGEOVER

Increases Bearing Output Ten-Fold

FROM 200,000 to 2,000,000—that is the increase in the length of runs on rod bearings for automotive socket tie rod assemblies reported by Thompson Products Co., Detroit, since installation of carbide cut-out and cupping dies in a nine-stage progressive die set. The dies formerly were troublesome in that it was necessary to shut down the machine for 2 hours every 200,000 pieces to sharpen the cut-out die which even then had to be replaced after some three sharpenings.

First move made by Thompson to eliminate this production hindrance was to change cut-out die to one of cemented carbide supplied by Carboloy Co. Inc., Detroit. Later the high speed forming die in the fourth station was replaced with one of the same material. Both dies are of the same design as the originals; and lubricant and machine speed of 105 strokes per minute also are the same.



It was found that after considerable service, the cut-out die is not dulled, but it is removed and resharpened after it has performed 2,000,000 operations, the feeling being that this practice gives longer total service life. To date, the carbide forming die performed over 5,000,000 operations without requiring polishing, the company states. The concern also estimated that about 44 hours of maintenance time is saved on a year's run of 5,000,000 tie rod bearings through use of carbides.

Accompanying illustration shows the die set with a strip revealing work performed in each stage at the bottom. Carbide dies are designated by two arrows. Operations performed in the nine stages are as follows: Oil groove is formed; stock is blanked; the disks are separated; first forming draw is performed in the Carboloy die; fifth station is for locating; part receives the final draw; center hole is pierced; it receives a restriking blow at the eighth station; and the final step is cutting out by the carbide die.

Bearing material is cold drawn SAE 1010 stock, 0.078-inch thick. The machine used is a 50-ton Henry & Wright dieing machine. Ordinary drawing compound is ratchet fed into the stock as it enters the die.

—o—

Distribution of a computer of corrosion resistance, which reportedly will serve as an aid to those who buy or specify metals to be used in corrosive environments is announced by H. M. Harper Co., Chicago 18, Ill. It is based on tests and classifies the resistance of 13 nonferrous and stainless steel alloys in 142 corrosive applications with degrees of excellent, good, fair and no good. Footnotes broaden the scope of the computor to include most of the common uses and many unusual ones.

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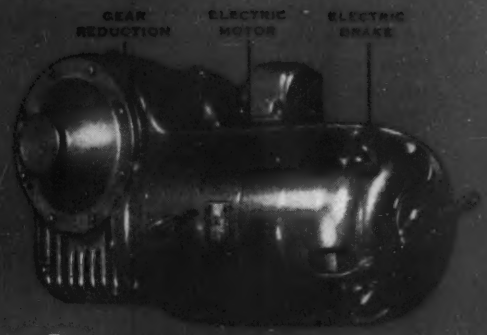

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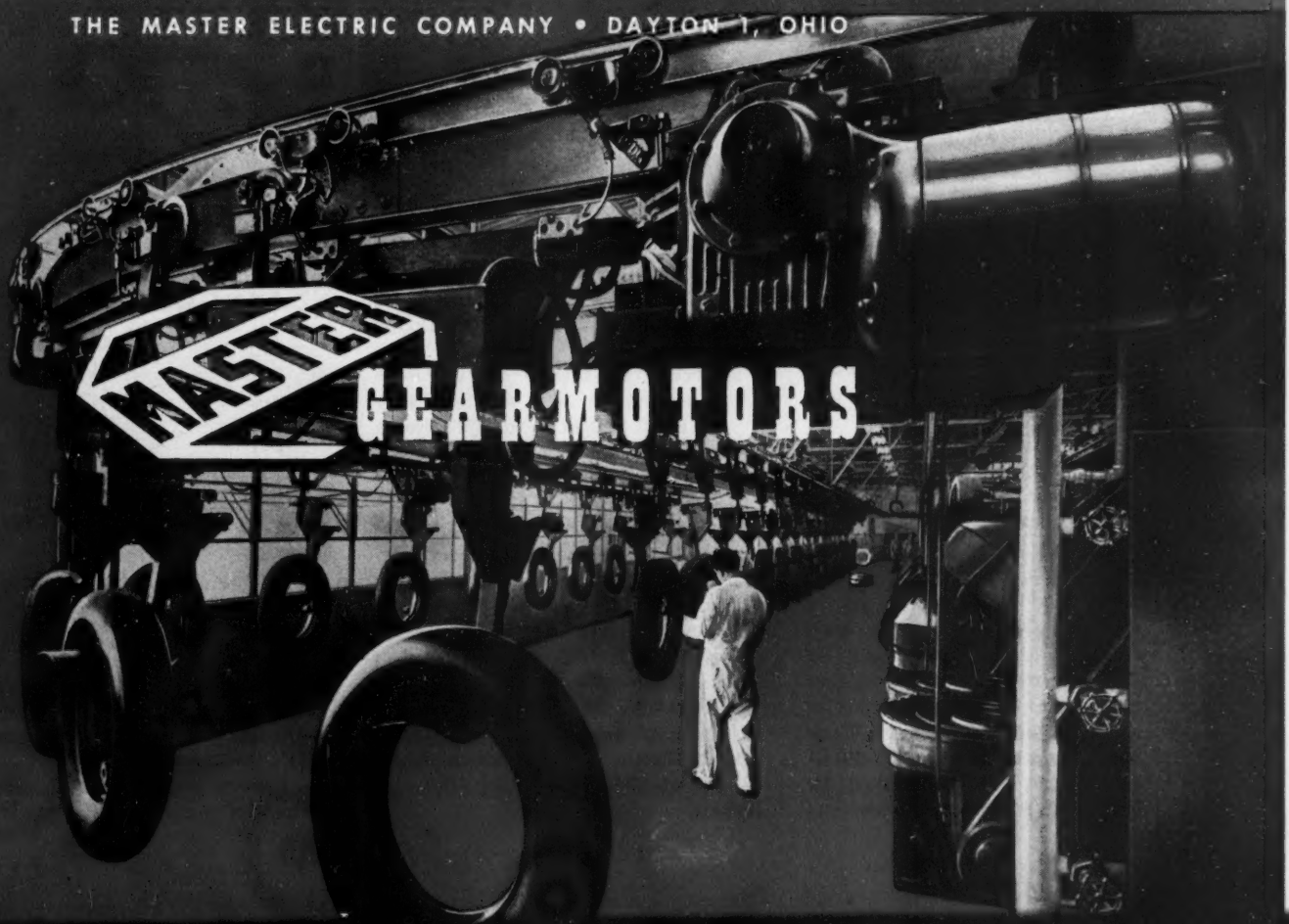


Antifriction Bearings—*Concluded from Page 74*

each 10 inches in diameter. One row is joined on a 1-15/16-inch shaft, 40 feet long, a shaft revolved by a three horsepower motor in conjunction with a variable speed control driving through a speed reducer, the ratio of which is 900 to one. Pulleys of the second row revolve on individual shafts. They may be moved forward or backward to accommodate shells of various diameters; several shells of different diameters may thus be handled for welding at one time.

All pulleys revolve on Fafnir LAKS. Each of these pillow blocks offers the advantages of a wide inner ring ball bearing with Mechaniseals—simply installed and removed, of positive lubricant retention, maximum dirt exclusion and requiring minimum maintenance. The seals of each ball bearing in an LAK block are of the integral noncontact type, permanent and nonwearing. Each has a ready means for introducing additional lubricant to the bearing if needed.

A newly-developed textile machine designed by the Whitin Machine Works, Whitinsville, Mass., a mammoth synthetic thread twister, depends heavily on Fafnir ball bearings to attain a remarkable operating tolerance, Fig. 29. This machine has to stretch a delicate thread to a uniform 0.002-inch diameter and hold that diameter to within a 1 per cent tolerance down a 40-foot line of spindles.

Relative velocity of feed rolls and draw rolls, which do the stretching, must remain absolutely constant. This required precision designing, a train of 13 extremely accurate helical gears and, of course, precise concentricity of shafts. This requires ultraprecision ball bearings to support these shafts, bearings in which tolerances on diameters and eccentricities are held to unbelievably close limits. This application is another postwar use of ball bearings in the textile mill equipment field, an industry showing an amazingly rapid growth in application of antifriction bearings.

The pump is the most widely used machine in the United States; pumps constitute one of the important outlets for antifriction bearings. There are more than 100 million pumps in the country compared with 35 million automobiles, 20 million refrigerators and 28 million telephones. Automobiles, plumbing, air conditioning and refrigeration use the great bulk of pumps; of basic industries using the most pumps, chemical processing ranks first with metalworking second.

For many years, angular contact types of ball bearings have been used on vertical motors when a high thrust capacity was needed. This type of bearing was developed to provide a single-row bearing which would be capable of taking a heavy thrust load and is particularly suitable when thrust is always present in one direction.

The vertical hollow shaft high thrust motor was developed to provide a drive for the deep well turbine pump. This pump inherently has a high hydraulic thrust load and this load plus the actual weight of the pump, snafting, etc., must be carried by the thrust bearing in the motor.

One of the problems resulting from the use of these bearings has been the overheating of the bearing due to the foaming and churning of the oil. In its new Tri-Clad vertical motor, General Electric has solved this problem very simply by a new system of controlled lubrication, Fig. 30 (A) and (B). A metering hole allows just the right amount of oil to flow through the bearing. A large oil reservoir has been cast integral with the motor end shield and is of sufficient capacity to allow the oil to cool and recover before being recirculated through the bearing. This feature contributes to increased life of bearing and lubricant.

Due to General Electric's use of this system of controlled lubrication, it was possible to design the oil chamber so that during standby periods the oil level is above the top of the balls. This protects the bearings from rust and keeps the motor in top operating condition at all times and assures continuity of service of the complete pump unit.

Guide bearing in the lower end shield is a single-row ball bearing with the lower side shielded. This bearing has a pressed steel shield which is swedged into a groove in the outer ring, with very close clearances of revolving on stationary parts. This shield retains the lubricant in the bearing and prevents the entrance of dust, mud, water and other foreign matter into the bearing. While this bearing is designed to provide accurate positioning of the shaft, it is also free to move axially, thus permitting shaft expansion without adding stress to the bearing.

pH Scale Standardized By Bureau of Standards

Increasing need in science and industry for accurate determinations of acidity has led the National Bureau of Standards, Washington, D. C., to develop and recommend for adoption a single standard pH scale. It is proposed that the pH assigned to solutions of buffer substances distributed by the Bureau as standard samples be taken as the fixed points on this standard scale.

Differences among presently used pH scales are the direct result of different procedures, definitions and assumptions employed in the arriving at the pH of the standard. Four buffer materials in the form of standard samples are being supplied by the Bureau of Standards to encourage standard procedure. These substances are acid potassium phthalate, potassium dihydrogen phosphate and disodium hydrogen phosphate (to be used together) and borax.

In order to assign exact values to these fixed points, it was necessary to set up a scale based upon some suitable definition of pH. The pH of the Bureau standards is derived from measurement of the electromotive force of cells without liquid junction, in which they are used as electrolytes. These cells are specially designed, utilizing the highly reproducible hydrogen and silver-silver chloride electrodes.

The Bureau's computation of the pH is based upon several reasonable assumed relationships between ionic activities and mean activities, found to give identical values for dilute solutions.

Disk Brake for Railway Cars Developed

Ten years of research are behind the recent announcement of a new railroad disk brake developed by Budd Co., Philadelphia, which will stop a railway passenger car without discomfort to passengers from 60 miles an hour in less than 1000 feet. It is reported that this brake eliminates grabbing and rim wear.

The disk brake is described as a friction machine in which stationary asbestos-lined shoes grip both sides of a revolving disk attached to the axle. Numerous internal fins on the disk dissipate the heat rapidly and keep disk and shoes cool. It is said that the newly developed brakes meet every requirement of the Association of American Railroads.

New Products and Equipment

Additional information on the new products and equipment described on this and succeeding pages may be obtained, without obligation, by checking appropriate numbers on the cards following page 112

1. Hand Guided Fork Truck

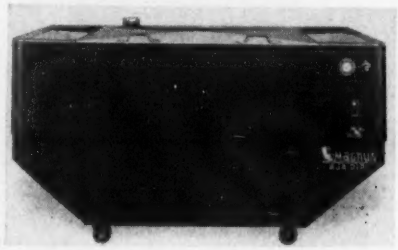
Hand guided, but fully powered, the new electrically powered Worksaver tilting fork industrial truck, made by Yale & Towne Mfg. Co., 4530 Tacony St., Philadelphia 24, Pa., is capable of the functions performed by full size fork trucks and has the advantage of being small enough to get into otherwise inaccessible places.

Truck can lift 3000 pounds if the load is not over 28 inches long and

2000 pounds if it is not over 48 inches long. It will hoist to a height of 58½ inches and tilt to 21 degrees. Other features are two speeds forward and reverse, inside turning radius of 31 inches and outside turning radius of 81 inches.

2. Cleaning Machine

Fast cleaning is obtained by mechanically raising and lowering the platform containing the dirty parts in the Aja-Dip cleaning machine, recently redesigned by Magnus Chemical Co. Inc., Garwood, N. J. This dipping action is accomplished 60 times per

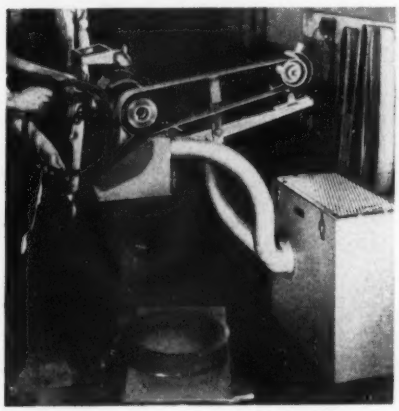


minute through the cleaning solution in an 8-inch vertical stroke.

Cleaning is fully automatic, labor being required for loading and unloading only. Machines are offered in 13 sizes and types with capacities from a few pounds to 2200 pounds. They may be used with either hot or cold cleaning solutions and may be heated by steam, electricity, oil, gas or kerosene.

3. Backstand Grinder

Conversion to a dustless backstand sander-grinder combination from a standard pedestal grinder is possible with a standard backstand attachment, a hood, two lengths of flexible metal hose and a Dustkop dust collector, made by Aget-Detroit Co., Main at Washington Sts., Ann Arbor, Mich. The model 420 dust collector is a self contained unit, having its



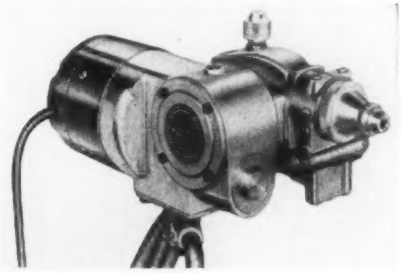
own motor driven fan, cyclone separator and second stage filter.

Portability of the entire outfit permits it to be moved as a complete unit to other locations in the shop as required.

4. Metallizing Spray Gun

Powered by a 1/20-horsepower constant speed induction motor, a new type metallizing spray gun, the Mogulectric, is being introduced by Metallizing Co. of America, 1330 West Congress St., Chicago 7, Ill., for production line spraying where top speeds are essential. By using different combinations of gearing most any spraying speeds may be obtained so as to spray at top efficiency any of the metals used.

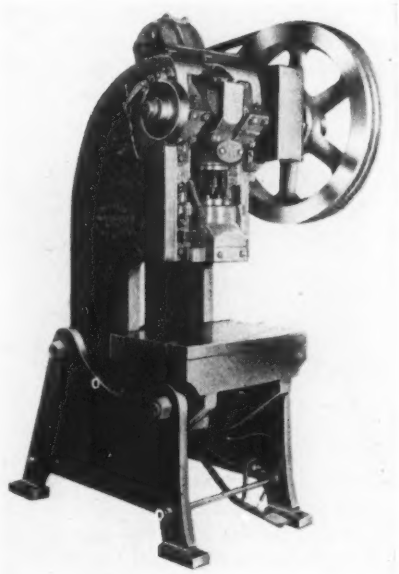
Uniform wire speed is assured by the constant feed motor. Only adjustments required are gas and air. Gear reduction is at front end of motor which runs in fluid grease bath. The drive component carrying the feed rolls and combustion unit may be swung from a horizontal spraying position so that the gun may spray at



any angle. Turning a switch and lighting places gun in operation. It is offered in 25, 50 and 60 cycles.

5. Punch Press

Seventy and 100 ton capacity steel welded punch presses, built by Superior Punch Press Co., 3610 Superior Ave., Cleveland, feature a brake which is applied only at the moment of clutch disengagement. The brake is self-energizing. Therefore, the braking increases in pressure until the crankshaft reaches zero speed. With brake action synchronized with the clutch so that when the clutch en-

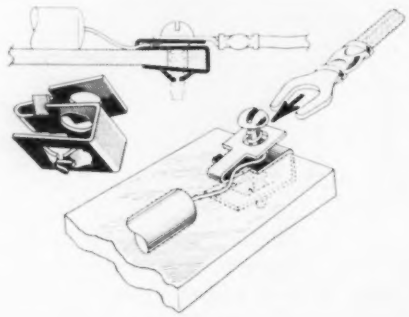


gages the brake disengages, a saving in horsepower and brake lining is attained.

Clutch is cam-controlled, the cam being mounted on the crankshaft which works the throw-out yokes. This practically eliminates wear on clutch parts. Standard stroke on the 70-ton press is 3½-inches. Bolster plate measures 22 x 32 inches.

6. Fastener

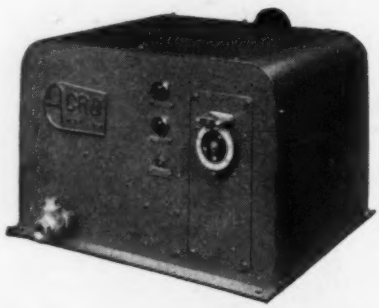
Interconnecting of capacitors and resistors is facilitated on electrical terminal boards with a new type Speed-Nut designed by Tinnerman Products Inc., 2039 Fulton Rd., Cleveland 13, O. In assembly, the U shape of the nut slips over the terminal



board and holds itself over the clearance hole. A screw is then partially run down through the nut and board to anchor wires in place, one at a time, until all are attached. Screw is then tightened only once to complete the entire connection.

7. Spot Welder Control

Development of a sequence control capable of converting ordinary resistance welders to the production of high strength spot welds in sheet aluminum and most nonferrous metals is announced by Acro Welder Mfg. Co., 1825 West St. Paul Ave., Milwaukee 3, Wis. The unit may be used with



any type air operated spot welder of sufficient capacity.

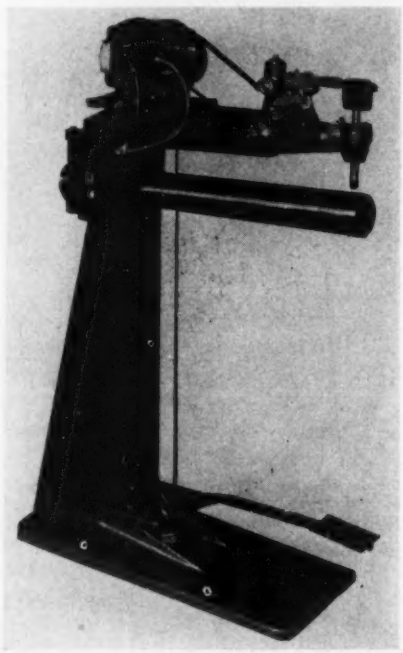
Control operates on the forge-delay principle, is easily installed and operated and works in conjunction with standard transformer type alternating current air operated welding machines, timers and contactors. Its calibrated dial type timer is unaffected by line voltage change. Two models made fit into the entire range of air operated spot welders.

8. Four-Way Pallet

Palmer-Shile Co., 16025 Fullerton Ave., Detroit 27, Mich., is announcing a new four-way, single face, all steel pallet constructed of corrugated rolled steel, welded throughout. It is built with beveled edges on two sides to permit trucks to ride over easily. Face is rolled channel steel, with a center brace for extra weight loads. Pallet may be used with either power lift or hand trucks.

9. Riveting Hammer

High Speed Hammer Co. Inc., 313 Norton St., Rochester 5, N. Y., is offering a new, specially equipped riveting hammer with a 24 inch long steel arbor, especially suited for sheet

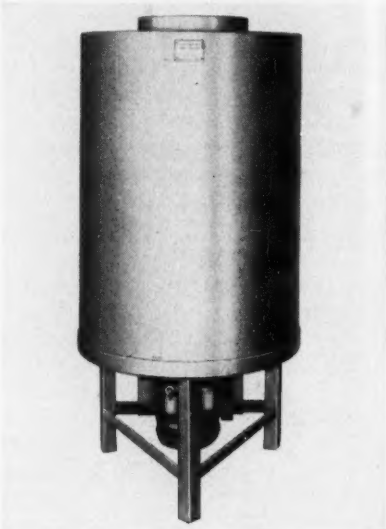


metal work. While this unit has a capacity of from 1/8 to 1/4-inch diameter rivets, units having greater or lesser capacities are made by the company.

10. Fume Separator

Contaminated air may be cleaned without loss of room heat by a fume separator developed by Industrial Electroplating Co. Inc., 219 West Vermont St., Indianapolis, Ind. Unit draws contaminated air off electroplating tanks, cleans it by water absorption and centrifugal separation and returns pure air to the shop without wasting heat.

Separator may be used for the control of anodizing, chromic acid, caustic soda, caustic oxidizing, sulphuric and all cyanide solution fumes. Two models are manufactured, one with a



capacity of 1500 feet per minute and the other with 3000. Each model is offered with plain carbon steel or stainless steel separating chambers.

11. Tumbling Barrel

It is possible to deburr, burnish, clean, polish and smooth surface metal and plastic parts on a mass production basis with the Murco tumbling barrel, made by D. J. Murray Mfg. Co., Wausau, Wis. A wide range of speeds, changeable while the barrel is in motion, meet various operating conditions and requirements.

Dump pans are mounted on casters and have a notched bail handle for

crane hooks. The discharge end of the pan is funnel shaped, fitting in the compartment opening to facilitate loading. Separating screens of

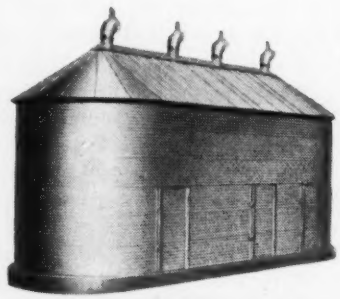
(For more information, use the card following page 112.)

STEEL WANTED

TO HELP AVERT INTERNATIONAL GRAIN SHORTAGES

AMERICA'S FARMERS are capable of and willing to produce the food the world needs. *But production is limited by inadequate storage facilities for crops.*

A big portion of this year's crops—enough to supply much of the world's requirements—will be consumed by rats, spoiled in storage by bad weather, lost to fire. *Good farm buildings to protect stored crops from these hazards would prevent this loss.*



STEEL BUILDINGS LIKE THIS REDUCE CROP LOSSES

These all-steel, hazard-proof farm buildings take the gamble out of crop storage . . . make harvests of every type worth their full value. Due to the shortage of steel we are limiting our production to only those types of buildings which will assist in the food conservation program—*but we do need more steel to continue making these critical buildings.*

FARMERS NEED STEEL BUILDINGS TO PROTECT CROPS

STEEL FARM BUILDINGS are recognized as the best insurance against crop losses. They're impervious to fire, weather, pests. Today's farmer, as a matter of business efficiency, is insisting on absolute protection. Give him steel buildings and he will get full value from crops . . . will produce more food and better food. *Is there a worthier use for steel . . . than to throw its full weight into the battle of the breadlines?*

WE WANT STEEL to produce Martin Steel-Bilt Silos, Haymakers, Cribs and Bins. There is an urgent, food-saving need for every building that we are able to produce. Our all-steel farm buildings, designed and fabricated exclusively for farm use, prevent losses of from 10% to 50%. But we need more steel to make these buildings in sufficient volume to supply the need.

WE NEED COATED SHEETS—20 to 26 gauge. We can use sheet bars, ingots, scrap and pig, which mills will convert for us into stock of our specification. *Telephone or wire us.*

STEEL MARTIN-BILT
FARM BUILDINGS

MARTIN STEEL PRODUCTS CORP., Mansfield, Ohio

PIONEERS IN THE DESIGN AND FABRICATION OF STEEL BUILDINGS EXCLUSIVELY FOR THE FARM

various wire mesh may be mounted in frames to fit dump pans. All moving parts are either protected with guard rail, steel enclosures or concealed.

12. Part Disintegrator

Broken taps, drills, studs, reamers, etc., may be removed from die sections, castings, hardened steel, brass and other alloys without distortion or heating of the casting of machined part, by an automatic distintegrator, announced by Ansaldi Tool & Engineering Co., 4744 Twelfth St., Detroit 8, Mich. Electrodes are used as the vehicle to remove the obstructions and once adjusted, will complete the operation without further attention.

No. 2 taps up to 1 inch in diameter are easily removed. A ½-inch tap is disintegrated in 7 or 8 minutes. Electrodes several feet in length are available for deep holes. Unit may be used horizontally, upside-down, to a height of 7 feet or close to the floor. Standard type is equipped with casters. A portable unit is adaptable to drill press operation.

For STRAIGHTENING... SHAFTING... AXLES
ROUND BARS... RODS

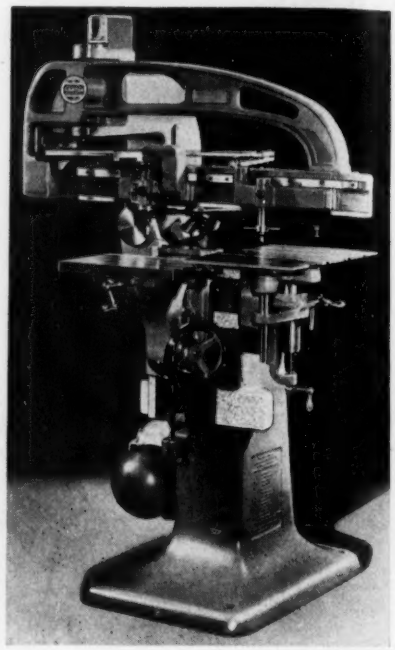
The modern design and quality construction of this 200-ton R. D. Wood Shaft Straightening Press are your guarantee of smooth, fast, accurate handling of work... *plus* increased production. The press frame is constructed of heavy welded steel and carries individual cast steel main and pull-back cylinders. Press table is 73" long with a gap of 13" between dies. Resistance blocks are movable on the vertical frame face. The table is provided with four heavy stationary rollers for shifting shafts lengthwise, as well as four sets of lifting and turning rollers operated by an air cylinder. An adjustable stop, which will take full press load, is located in the center of the press frame to prevent over-bending. High and low pressure pumps, operated by a 20-hp motor, provide a ram speed of 72" per minute for low pressure closing. High pressure ram speed is 8.5" per minute. Send today for descriptive literature. R. D. Wood Company, Ledger Building, Independence Square, Philadelphia 5, Pa.

HYDRAULIC PRESSES AND VALVES FOR EVERY [illegible] • ACCUMULATORS • ACCUMULATORS • INTENSIFIERS

R.D. Wood Company
EST. 1803

13. Pantograph Machine

Producers of small, intricate dies, molds, stamps and hobs are potential users of the P-13 three-dimensional pantograph machine developed by George Gorton Machine Co., Racine, Wis. It incorporates the Ratiobar, a device which, supported at either end by a delicately balanced over-arm, aligns the pivot center, cutter spindle



and tracing style in a straight line. Ratio settings are simplified as this straight line is maintained in all pantograph settings.

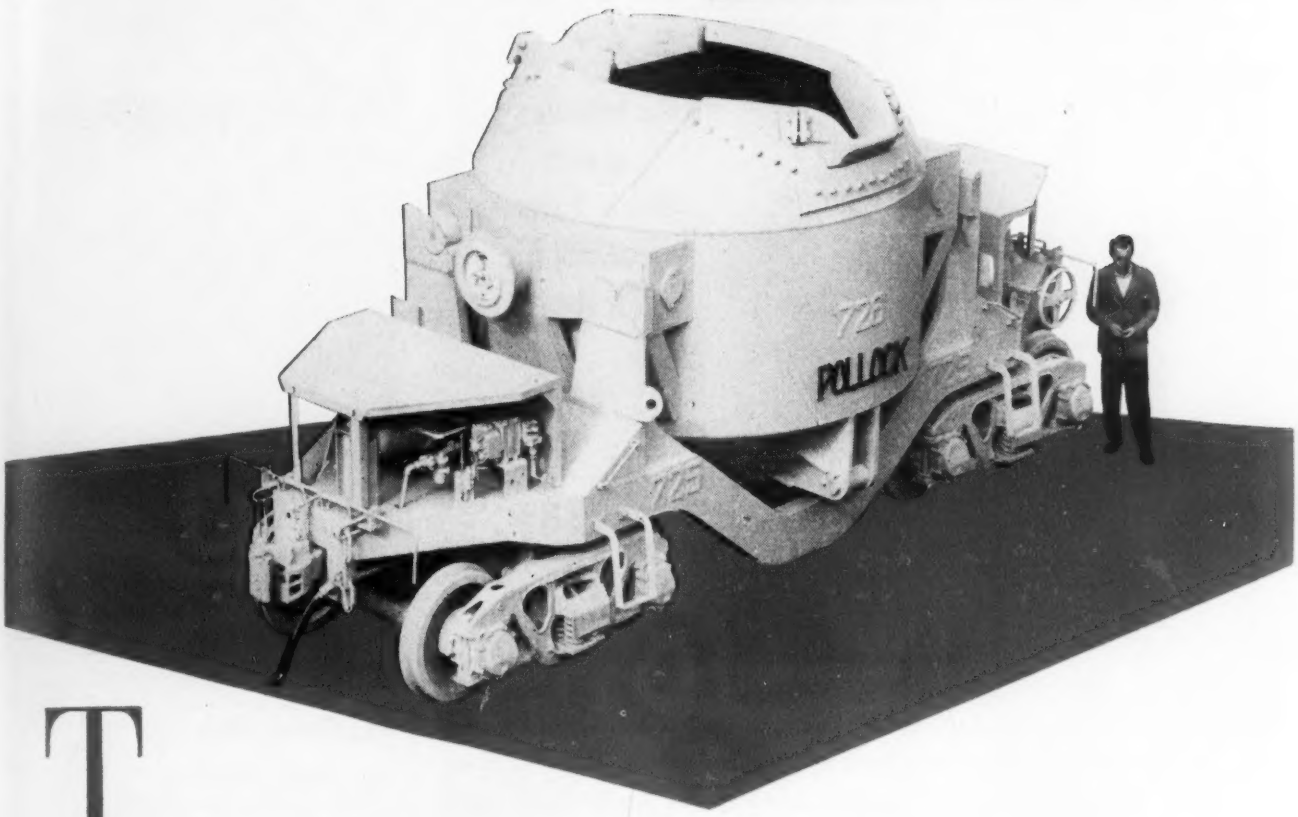
The 3-dimensional machine employs an enlarged 3-dimensional master pattern. Its surface is traced manually with the tracing style while the cutter reproduces at the desired ratio of reduction on the work piece all of the angles, curves and surfaces. With a roll attachment, light milling and engraving may be done on cylinders, rolls, tubes, dials, etc. Ratios from 2 to 1 to 40 to 1 are available.

14. Heliarc Welder

Hobart Bros. Co., Troy, O., is announcing an alternating current welder designed for use with Heliarc equipment, made by Linde Air Products Co., using helium or argon for inert gas shielded welding. This model TIH-300-s has high frequency stabilization to insure easy starting and dependable maintenance of the gas shielded arc with practically no rectification of the alternating current passing through it.

Sound welds of clean appearance are insured and amount of current

POLLOCK hot metal cars



To meet all your Hot Metal handling requirements

Pollock builds all types of hot metal cars—equipped with demountable ladles, standard or tailor-made to meet your individual needs—in any capacity up to 100 tons, and these can be made even larger, depending on railroad clearances. The car bodies are of welded steel construction, either all-welded in one piece, or with end and side frames bolted together to save space in shipping. Pollock introduced the Kling-type car because of its exceptional heat-retaining properties, and both Kling and Open-top types can be supplied for long pouring or short pouring.

Pollock cars can be equipped with K brakes or AB brakes. Trucks have A. A. R. standard wheels, axles, bearing brasses and springs. In addition, roller bearings of your own choice can be supplied, or special end-thrust bearings can be provided where standard A. A. R. bearings wear too fast.

Let The William B. Pollock Company's trained experts recommend the equipment best suited to your plant, after a careful study of your hot metal handling requirements. . . . A phone call or letter will bring our engineers to your office.

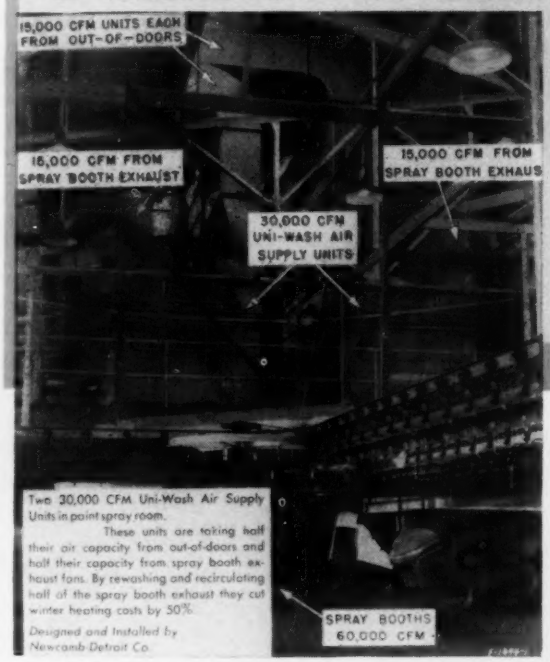
THE WILLIAM B. POLLOCK CO.
YOUNGSTOWN, OHIO

STEEL PLATE CONSTRUCTION · ENGINEERS · FABRICATORS · CONSTRUCTORS

NEWCOMB-DETROIT

Engineered • Built • Installed

2 MILES OF FINISHING SYSTEM


15,000 CFM UNITS EACH FROM OUT-OF-DOORS
15,000 CFM FROM SPRAY BOOTH EXHAUST
15,000 CFM FROM SPRAY BOOTH EXHAUS
30,000 CFM UNI-WASH AIR SUPPLY UNITS
SPRAY BOOTHS 60,000 CFM

Two 30,000 CFM Uni-Wash Air Supply Units in paint spray room.

These units are taking half their air capacity from out-of-doors and half their capacity from spray booth exhaust fans. By rewashing and recirculating half of the spray booth exhaust they cut winter heating costs by 50%.

Designed and Installed by Newcomb-Detroit Co.

The **Auto Industry's Largest Small Parts Finishing System**

Newcomb-Detroit engineered, built and installed this huge finishing system recently in one of the large Detroit automotive plants. It consists of 4 identical finishing lines, each 2650 feet long. The parts on each line pass through the following stations: wash, spray bonderite, prime coat (dip), prime baking, finish coat (spray) and finish bake. The four lines are installed side by side and together make up the largest small parts finishing system in the automobile industry.

Newcomb-Detroit is qualified to engineer, build and install finishing systems for all types of industries . . . finishing systems that always provide fine product finish and economical operation.

Re-circulates 50% of Spray Booth Air

The air supplied to the spray booths in this installation is processed in Uni-Wash Air-Supply Units. These units take 50% of the air from the out-of-doors and 50% from the spray booth exhaust. This mixed air is then washed, dried and heated before being delivered to the spray areas, free of fumes and odors. This system effects up to 50% saving in heating expenses during winter months.

Complete details on the entire line of Newcomb-Detroit equipment is contained in this large catalog. Available without obligation upon letterhead request.

Established 1912

NEWCOMB-DETROIT COMPANY

Fabricating Plant **GRAND RAPIDS**

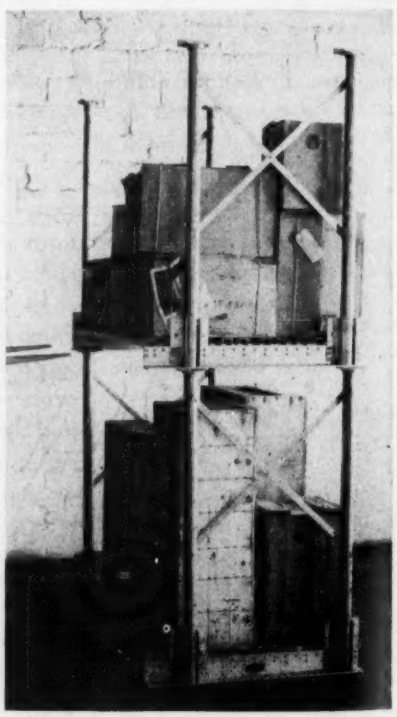
Main Office and Plant **5741 Russell Street DETROIT 11, MICHIGAN**

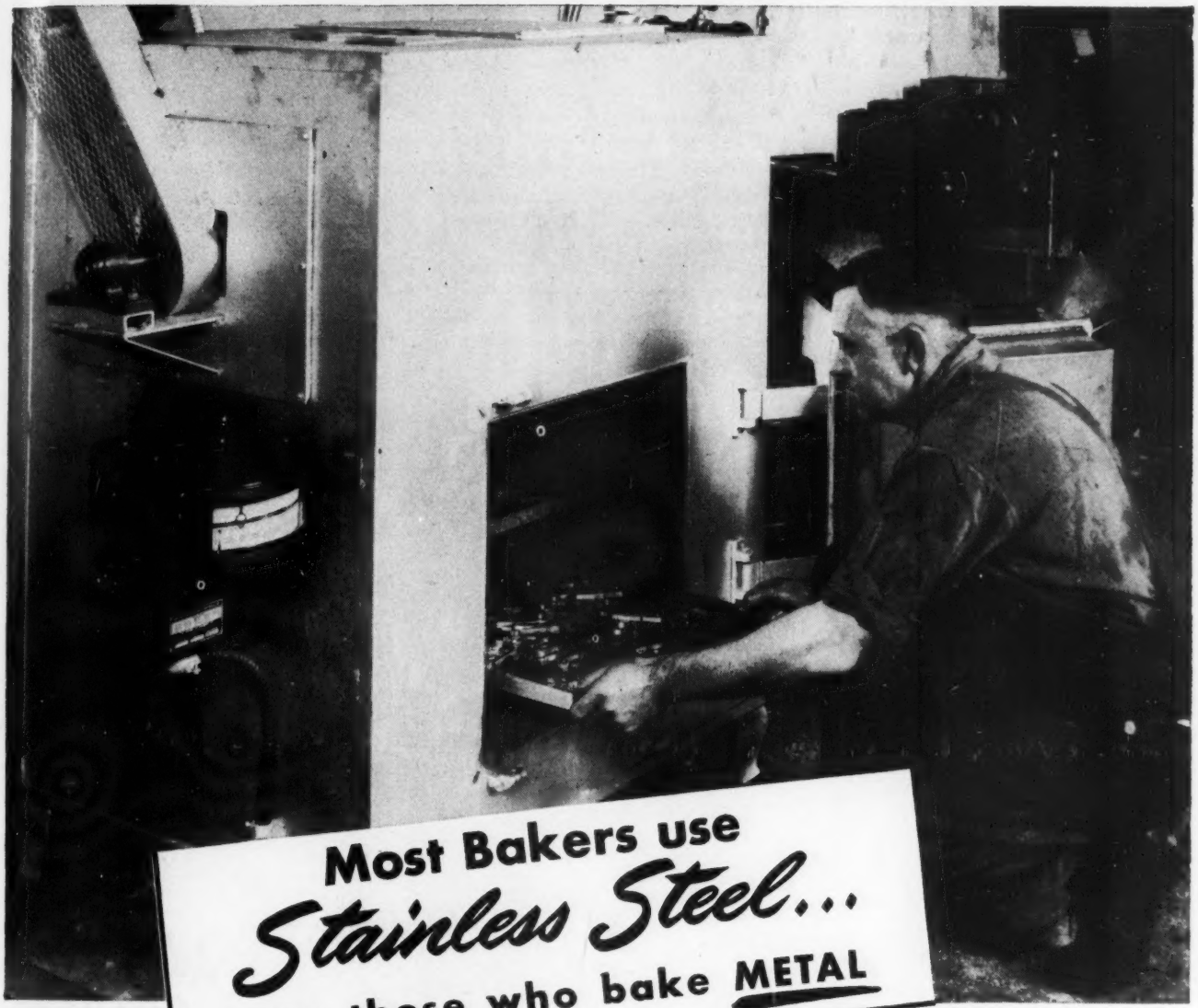
Western Sales Office **CHICAGO**

drawn from power lines by transformer is reduced. A window is provided through which the spark gap may be observed. Pressing a foot pedal instantly starts the arc through the tungsten electrode and simultaneously opens valves permitting shielding gas and cooling water to flow through the special torch. Water and gas continue for a predetermined length of time after pedal release breaks the arc.

15. Pallet Rack

Tobey International Co., 7005 South Western Ave., Los Angeles, Calif., is manufacturing the Stak-Rak, an aluminum pallet with four tubular columns at the outside corners for supporting tiered loads. These columns





Most Bakers use *Stainless Steel...* even those who bake METAL

REALLY up-to-date bake-shops are all agleam with shining Allegheny Metal dough mixers, trays, oven linings and trim, etc., primarily because of stainless steel's great resistance to corrosion and wear. That makes it easy to keep sanitary, cuts maintenance and cleaning costs to a whisper, protects product taste and purity.

But in the Allegheny Metal-lined annealing oven above, where tool steel parts are heat-treated, the emphasis is on stainless steel's resistance to oxidation at high temperatures, and its retention of strength. And we've gone much farther along this line to develop the Super High-Temperature Alloys that make possible such marvels as jet engines, gas turbines and the like.

The whole point is that stainless steel is the most tremendously versatile material any manufacturer can hope to find. Allegheny Metal has infinite potentials for improving your equipment or product, and at the same time, your competitive position. *And it's available!* Plan for it, place your order for it *now*—and count on our Technical Staff and Development Engineers to help you realize the fullest advantage from it.

ALLEGHENY LUDLUM STEEL CORPORATION Pittsburgh, Pa.

Pioneer in Specialloy Steels

W&D 1275B

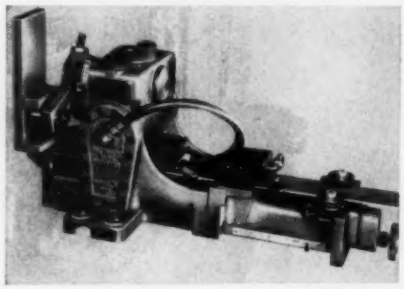
ALLEGHENY METAL is stocked by all JOS. T. RYERSON & SON, INC. Warehouses

fold down to the top surface of the pallet, facilitating handling and storage when not in use. Each unit measures 48 x 36 inches and is 4 feet high and has a load capacity of 3000 pounds.

Units may be stacked three-high in buildings with a 13 foot overhead clearance. Stacking may be accomplished with any fork lift truck of proper capacity. Each units weighs 53 pounds empty.

16. Punch Press Feed

Stock is saved, down time for die sharpening is reduced and die service life is increased with the hy-



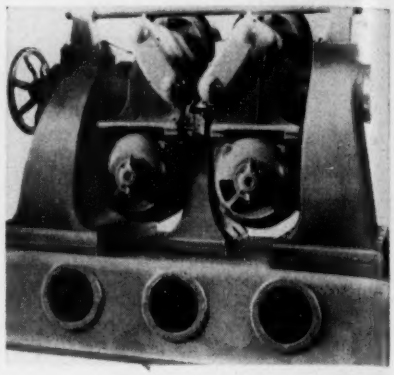
draulically operated stock feed for use on almost any punch press, made by Haller Machine & Mfg. Co. Inc., 7940 Tireman Ave., Detroit 4, Mich. It will handle all stock up to 4 inches wide and 3/32-inch thick. Feed length may be from 0 to 5 inches within 0.003 to 0.005-inch each index.

Known as model D-600, the self-contained unit is mounted on the press bolster plate and can be located to feed from left, right, front or rear. It is driven directly from the press ram, with any ram stroke up to 6 inches, and has sufficient power to pull the stock through a roll-type straightener.

17. Derodder

In mandrel drawing of metal tubing it is necessary to relieve the tubing so that the mandrel may be removed after mandrel and tube have passed through the die. For this purpose a model GA 1 high speed derodder or mandrel reliever is being manufactured by Glengarry Machine Works Inc., Bay Shore, N. Y. Operating at speeds up to 120 feet per minute, it will handle ferrous tubing in sizes up to 7/8-inch in diameter with wall thicknesses up to 0.065-inch and nonferrous tubing in diameters up to 1 inch.

Machine's transmission runs in oil. It has simple micrometer adjustments, which when set, require no further attention. For light work on irregular lengths of tubing, the tie



bar may be quickly removed. Its compact design makes for easy installation.

18. Heliwelding Units

Demand for equipment for high speed, high quality welding of stainless steel, aluminum and magnesium is being met by two new Heliwelding units, a machine type electrode holder and an automatic unit, de-

(For more information, use the card following page 112.)

A Complete Warehouse Service for...
SHEETS • PLATES
STRIP • STAINLESS STEEL
TIN PLATE • BARS • SHAPES
WIRE PRODUCTS • ALLOYS
Adequate Stocks!
Prompt Shipment!
Tri-Boro Steel Supply Co., Inc.
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WORLD-WIDE EXPORTERS • 620 FIFTH AVENUE, NEW YORK CITY
Tri-Boro Steel Supply Co., Inc.

Splits the load in two!

Rollway Right-Angle-Loaded Bearings split all loads into pure thrust and pure radial . . . and carry each load at right angle to the roller axis. Hence, compound loads, oblique loads and their resultants do not bear upon one bearing alone.

This prevents wedging of rollers and pinch-out. Reduces roller end-rub, wear-back and rubbing friction. Cuts risk of shut-downs . . . cuts cost of maintenance and replacements.

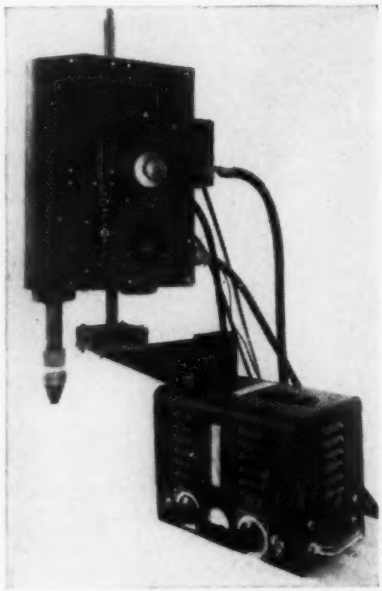
ROLLWAY BEARING COMPANY, Inc.
SYRACUSE, N. Y.

ROLLWAY
RIGHT-ANGLE-LOADED
BEARINGS

OFFICES IN: PHILADELPHIA • BOSTON • PITTSBURGH • CLEVELAND
DETROIT • CHICAGO • MINNEAPOLIS • HOUSTON • LOS ANGELES

veloped by Air Reduction Sales Co., 60 East 42nd St., New York 17, N. Y. Machine holder is designed for mounting on a Radiagraph or other travel mechanism for moving along the joint or for fixed position used with work moving beneath the arc.

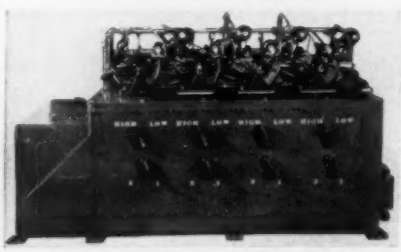
The automatic unit consists of a holder, holder carriage and a control box and is designed for continuous



operation. It is fully automatic and electronically controlled. Both units have a welding current capacity of 300 amperes and are fully insulated. Machine holder may be used with either alternating or direct current, but the electronic circuits of the automatic unit will operate on direct current only.

19. Preforging Heater

With a cycle of operation entirely automatic except for loading and unloading, a special purpose four-station resistance electric heater, made by Agnew Electric Co., Milford, Mich., is intended for high speed heating of materials prior to forging or hot upsetting operations. Placing part in position starts the cycle: High pres-

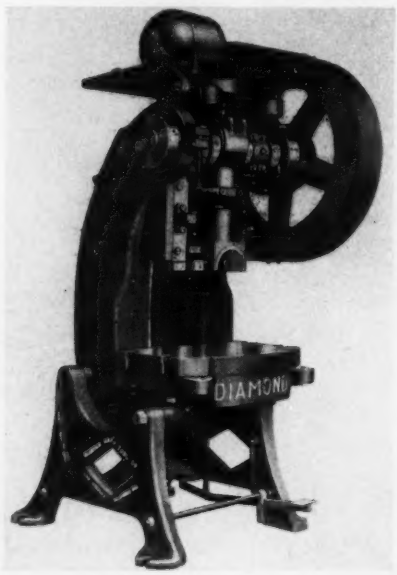


sure hydraulic clamping, photoelectric control of heating and voltage regulation by tap switches, part unclamped automatically at end of heat time.

Production is 1000 heated pieces per hour with one operator. Rapid heating tends to minimize scaling and reduces forging die maintenance. Machine is designed to heat core of the part first. Emergency stop buttons will break the cycle of operations on any one of the four stations. Inorganic insulated transformers have forced air and water cooling.

20. Punch Presses

Designed to strain gage analysis, both 55 and 56 ton punch presses made by Diamond Machine Tool Co., Los Angeles, Calif., have frames of open back, inclinable construction. All bearing and sliding surfaces are mi-



crofinished. Press clutch employs three sets of driving dogs engaging the flywheel at any 120 degrees angle of rotation. Dogs are oversize, being fully supported within clutch housing, this additional support eliminating practically all bending stress.

Press is capable of a maximum of 100 strokes per minute. Standard stroke is 3 inches but may be 8 inches to order. Shut die height is 16 inches and bed areas is 20 x 30 inches. Bed opening is 12-5/8 x 16-1/2 inches.

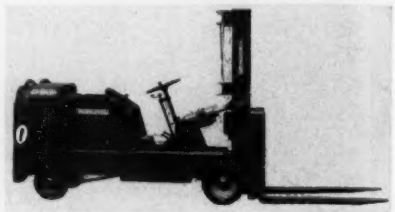
21. Terminal Blocks

A terminal "lock-in" arrangement which eliminates the danger of spade lugs pulling out is a feature of the new terminal block developed by Curtis Development & Mfg. Co., 1 North Crawford Ave., Chicago 24, Ill. Block has solder type spade lugs which are recessed into the body of the device. When binder screws are tightened, each lug is held rigidly in place against a shoulder of the tough plastic material forming the block.

Blocks are factory assembled in any desired number of terminals from 1 to 18. They are designed to fit installations where conservation of space or small available space is a factor. A 10-terminal block measures 5/8 x 13/16 x 5⅞-inches.

22. Fork Lift Truck

A lifting capacity of 15,000 pounds is claimed for the model LT-90 fork lift truck announced by Towmotor Corp., 1226 East 152nd St., Cleveland 10, O. It is similar in most respects to



other lift trucks made by the company and may be used in conjunction with the various fork lift truck accessories wherever special applications require.

23. Temperature Control

Warm up operations and subsequent tool adjustments are eliminated and variations in machine work caused by coolant temperature rises are prevented by a coolant temperature control unit developed for New Britain-

Gridley automatic screw machines by Niagara Blower Co., 405 Lexington Ave., New York 17, N. Y. Coolant is kept at a predetermined temperature by the constant evaporation of moisture on the outside of tubes through which the hot coolant oil is flowing.

When machine is stopped, a fall in coolant temperature is prevented by automatic operation of an electric element, also used for preheating after a longer shut-down period.

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

STEEL PRICES STRONG—While inflationary influences are exerting increasing pressure on the steel price structure, all current signs pointing to higher prices over coming months, no immediate general increase appears in prospect. Notwithstanding higher pig iron and scrap prices, and further increases in freight rates last week, leading steel producers are expected to hold off across-the-board advances for some time. Right now it looks as though price action, in the main, may be deferred until forthcoming wage negotiations are out of the way.

Meanwhile, sporadic advances by smaller producers can be expected. Last week scattered increases were effected on a number of steel products by non-integrated and semi-integrated mills. For example, cold-rolled strip was advanced $7 per ton by a New England interest, while two captive midwestern mills effected increases up to $10 per ton on galvanized and corrugated sheets, culvert and long ternes, and on hot-rolled sheets. One large eastern producer advanced prices on axles and wheels. At the same time upward adjustments are being effected in delivered prices by some sellers.

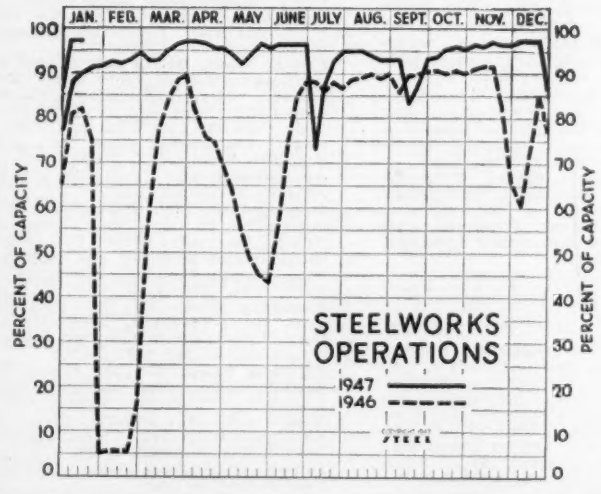
REVISE EXTRAS—While unrelated to the immediate situation affecting prices an interesting development of the past week was the issuance of revised extra cards on tin mill products and on hot-rolled sheet and strip by two producers. In both instances the changes, which involve both increases and decreases in prices to consumers, have been under consideration for some weeks past.

PIG IRON ADVANCES—With pig iron production continuing to run a losing race with demand an unusually strong situation prevails in this market. Prices were marked up $2 to $4 per ton by important producing interests last week, thus extending a price movement which started several weeks ago. Scrap is also showing definite signs of strength with price markups reported on limited buying at several points. There has been relatively little buying to test the major openhearth grades, but brokers are being forced to pay above recent levels to cover on existing contracts. Foundry grades continue to push to higher ground.

DEMAND PRESSING—Little change is reported in demand-supply conditions. Consumer requirements in the major steel products continue far in excess of supply and no early change for the better is in prospect. As a matter of fact, the increase in freight rates this past week promises to intensify the problem for some consumers since the higher rates may serve to further restrict marketing areas with the steel mills disinclined to absorb freight on shipments distant from their mills.

To what extent the new government allocations program will affect distribution is uncertain. The program is still in the organizational stage and until the mechanics of operation have been worked out there can be no certainty as to what to expect. Meanwhile, however, consumers are apprehensive that allocations to so-called essential industries may cut down the tonnages they now are receiving and this is contributing to the general confusion and uncertainty in the markets stemming from other influences.

PRICE COMPOSITES—STEEL's finished steel price composite held last week at $78.05, the average established the preceding week. Semi-finished steel prices likewise held steady, averaging $57.20. Steelmaking pig iron composite, however, advanced $1.88 during the week to $38.44, reflecting price markups at the various producing points ranging from $2 to $4 per ton. Nominally higher quotations for steelmaking grades of scrap in eastern Pennsylvania raised the scrap composite 16 cents to $40.08.



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts

	Week Ended Jan. 10	Change	Same Week 1947	Same Week 1946
Pittsburgh	102	None	98	89.5
Chicago	93	— 1	89.5	88
Eastern Pa.	92	None	82	80
Youngstown	93	+ 1	84	85
Wheeling	93.5	+ 3	89	95
Cleveland	89	— 2	92	84
Buffalo	87.5	None	90.5	81
Birmingham	99	None	99	95
New England	80	— 3	84	80
Cincinnati	86	— 3	80	81
St. Louis	89.5	None	72.5	68
Detroit	90	— 2	92	88
Estimated national rate	97	None	90.5	82

Based on weekly steelmaking capacity of 1,749,928 net tons for 1947-48; 1,762,381 net tons for 1946.

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COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	Jan. 10	Jan. 3	Month Ago Dec. 1947	Year Ago Jan. 1947	5 Years Ago Jan. 1943
Finished Steel	$78.05	$78.05	$76.15	$69.59	$56.73
Semifinished Steel	57.20	57.20	57.20	49.98	36.00
Steelmaking Pig Iron	38.44	36.56	36.31	29.56	23.00
Steelmaking Scrap	40.08	39.92	40.13	31.20	19.17

FINISHED STEEL WEIGHTED COMPOSITE†

Oct. 1947	3.45536c
Sept. 1947	3.45716c
Oct. 1946	2.86140c
Oct. 1942	2.37038c

* Straight Arithmetical Composites: Computed from average industry-wide base prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (rerolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading basing points), and on Steelworks Scrap (No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Finished Steel arithmetical composite, dollars per net ton on net ton basis; others, gross ton.

† Finished Steel Weighted Composite: Computed in cents per pound, weighted on basis of actual monthly shipments of following products, representing 81 per cent of total steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute: Heavy structural shapes, plates, standard rails; hot-rolled carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished material (except tin plate) and wire rods, cents per lb; coke, dollars per net ton; others, dollars per gross ton.

Finished Materials

	Jan. 10, 1948	Dec., 1947	Oct., 1947	Jan., 1947
Steel bars, Pittsburgh	2.90c	2.90c	2.90c	2.60c
Steel bars, del. Philadelphia	3.356	3.318	3.30	2.975
Steel bars, Chicago	2.90	2.90	2.90	2.60
Shapes, Pittsburgh	2.80	2.80	2.80	2.46
Shapes, del. Philadelphia	2.968	2.954	2.947	2.60
Shapes, Chicago	2.80	2.80	2.80	2.47
Plates, Pittsburgh	2.95	2.95	2.95	2.61
Plates, del. Philadelphia	3.19	3.17	3.16	2.77
Plates, Chicago	2.95	2.95	2.95	2.62
Sheets, hot-rolled, Pittsburgh	2.80	2.80	2.80	2.50
Sheets, cold-rolled, Pittsburgh	3.55	3.55	3.55	3.20
Sheets, No. 10 galv., Pittsburgh	3.90	3.90	3.90	3.55
Sheets, hot-rolled, Gary	2.80	2.80	2.80	2.50
Sheets, cold-rolled, Gary	3.55	3.55	3.55	3.20
Sheets, No. 10 galv., Gary	3.90	3.90	3.90	3.55
Strip, hot-rolled, Pittsburgh	2.80	2.80	2.80	2.50
Strip, cold-rolled, Pittsburgh	3.55	3.55	3.55	3.20
Bright basic, bess. wire, Pittsburgh	3.675	3.675	3.675	3.425
Wire nails, Pittsburgh	4.625	4.625	4.25	4.062
Tin plate, per base box, Pittsburgh	$6.70	$5.75	$5.75	$5.75

Semifinished Materials

Sheet bars, Pittsburgh, Chicago	$60.00	$60.00	$60.00	$47.60
Slabs, Pittsburgh, Chicago	47.50	47.50	47.50	41.40
Rerolling billets, Pittsburgh	47.50	47.50	47.50	41.40
Wire rod 7/32 to 1/4-inch, Pitts.	3.05c	3.05c	2.925c	2.55c

Pig Iron

	Jan. 10, 1948	Dec., 1947	Oct., 1947	Jan., 1947
Bessemer, del. Pittsburgh (N.&S. sides)	$40.996	$37.913	$37.879	$31.815
Basic, Valley	37.00	36.00	36.00	30.00
Basic, eastern del. Philadelphia	42.004	38.84	38.78	31.99
No. 2 fdry., del. Pgh. (N.&S. sides)	40.496	37.413	37.379	31.315
No. 2 fdry., del. Philadelphia	42.504	39.34	39.28	32.49
No. 2 foundry, Chicago	38.00	36.00	36.00	30.50
No. 2 foundry, Valley	36.50	36.50	36.50	30.50
Southern No. 2, Birmingham	37.88	34.88	34.88	26.88
Southern, No. 2, del. Cincinnati	40.74	37.74	38.544	31.75
Malleable, Valley	38.00	36.50	36.50	30.50
Malleable, Chicago	38.50	36.50	36.50	30.50
Charcoal, low phos., fob Lyles, Tenn.	50.00	50.00	46.40	37.50
Ferromanganese, fob cars, Pittsburgh	151.00	151.00	151.00	140.00

Scrap

Heavy melt. steel, No. 1, Pittsburgh	$40.00	$40.00	$39.90	$32.50
Heavy melt. steel, No. 2, E. Pa.	41.50	41.625	39.50	31.00
Heavy melt. steel, No. 1, Chicago	38.75	38.75	39.55	30.00
Heavy melt. steel, No. 1, Valley	39.75	39.75	39.50	32.50
Heavy melt. steel, No. 1, Cleveland	39.25	39.25	38.25	31.88
Heavy melt. steel, No. 1, Buffalo	43.50	42.50	39.00	30.88
Rails for rerolling, Chicago	60.00	58.625	51.00	36.25
No. 1 cast, Chicago	63.50	55.875	46.40	41.50

Coke

Connellsville, beehive furnace	$12.50	$12.25	$12.15	$8.81
Connellsville, beehive foundry	14.50	14.50	14.50	9.81
Chicago, oven foundry, del.	19.10	18.60	18.52	15.95

FINISHED AND SEMIFINISHED IRON, STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per gross ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants. Delivered prices do not include the 3 per cent federal tax on freight.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, open market, $80-$85. Forging quality $46, Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown.

Alloy Steel Ingots: Pittsburgh, $56.

Rerolling Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, $45-$50, sales by smaller interests on negotiated basis at $65 or higher.

Forging Quality Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, $55-$58; Detroit, del., $61; eastern Mich., $62.

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $66, del. Detroit $69, eastern Mich., $70.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Youngstown, $60; sales in open market $66 to $92.

Skelp: Pittsburgh, Youngstown, 2.60c-2.65c per lb.

Tube Rounds: Pittsburgh, Chicago, Gary, Cleveland, $69-70.

Wire Rods: Pittsburgh, Chicago, Birmingham, 7/32 to 1/4-in., inclusive, $2.80-3.30 per 100 lb. 7/32 to 47/64-in., inclusive, $2.75, Cleveland; Galveston, $2.95; Worcester, $2.90-2.95. San Francisco (base del.), $3.52.

Bars

Hot-Rolled Carbon Bars (O.H. only) and Bar-Size Shapes under 3-in.: Pittsburgh, Youngstown, Chicago, Gary, Cleveland, Buffalo, Birmingham, base, 20 tons one size, 2.90c; Detroit, del., 3.05c; eastern Mich., 3.10c; New York, del., 3.351c; Phila., del., 3.356c; San Francisco (base, del.), 3.63-3.95c; Los Angeles (base, del.), 3.625-3.86c; Seattle, 3.85c, base.

Rail Steel Bars: Same basing points as merchant carbon bars, except base is 10 tons. Prices upon application.

Hot-Rolled Alloy Bars: Pittsburgh, Youngstown, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 3.30c; Detroit, del., 3.45c; eastern Mich., 3.50c. (Texas Steel Co. uses Chicago base price as maximum fob Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base 20,000-39,999 lb., 3.55c; Detroit, del., 3.70c; Toledo, 3.75c.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Canton, base, 4.10c; Detroit, del., 4.25c; eastern Mich., 4.30c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base, 2.75c; San Francisco (base, del.), 3.33c; Los Angeles (base, del.), 3.325c; Seattle, 3.88c, base.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Buffalo. Prices upon application.

Iron Bars: Single refined, Pittsburgh 7.15c-†7.70c, double refined 8.00-†9.75c; Pittsburgh, staybolt, 8.85c-†11.25c.

†Hand puddled.

Sheets

Hot-Rolled Sheets (18 gage and heavier): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown, Sparrows Point, Ashland, Ky., base, 2.80c; Granite City, 3.175c; Detroit, del., 2.95c; eastern Mich., del., 3.00c; Philadelphia, del., 3.04c; New York, del., 3.172c; Los Angeles (base, del.), 3.54c; San Francisco, (base, del.), 3.545c. (Alan Wood Steel Co., Conshohocken, Pa., quotes 3.40c, Sparrows Point equivalent).

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.55c; Granite City, 3.65c; Detroit, del., 3.70c; eastern Mich., del., 3.75c; New York, del., 4.001c; Philadelphia, del., 4.006c.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) Pittsburgh, Chicago, Gary, Birmingham, 3.85c-3.95c; Youngstown, Sparrows Point, Canton, Middletown, base, 3.95c; Granite City, 4.05c; New York, del., 4.322c; Philadelphia, del., 4.19c; Los Angeles (base, del.), 4.62c; San Francisco (base, del.), 4.625c.

Corrugated Galvanized Sheets, No. 10: (Based on 5 cent zinc) Pittsburgh, Chicago, Gary, Birhingham base, 3.95c-4.05c.

Culvert Sheets, No. 16 flat: (Based on 5 cent zinc; corrugated 10 cents extra) Pittsburgh, Chicago, Gary, Birmingham: Copper alloy, 4.45c-4.55c; copper-iron or pure iron, 4.30c-4.90c. Granite City 4.65c and 5.00c, respectively. Los Angeles (base, del.), 5.24c; San Francisco (base, del.), 5.245c.

Aluminized Sheets: Hot-dipped, coils or cut to lengths: Pittsburgh, 7.50c.

Stainless-Clad 20%: Pittsburgh, Washington, Coatesville, Pa., No. 304, 22.00c; No. 410, 20.00c; No. 430, 20.50c; No. 446, 27.00c. Prices include annealing and pickling.

Long Ternes, No. 10: Pittsburgh, Chicago, Gary, base, 3.85c-4.05c.

Enameling Sheets, No. 12: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, 3.90c-3.95c; Granite City, 4.05c; Detroit, del., 4.10c; eastern Mich., 4.15c.

Electrical Sheets, No. 24: Field: Pittsburgh, Chicago, Gary, 4.50c; Kokomo, Ind., 4.60c. Armature: Pittsburgh, Chicago, Gary, 4.80c; Granite City, Ill., Kokomo, Ind., 4.90c. Electrical: Pittsburgh, Chicago, Gary, 5.30c; Granite City, Kokomo, 5.40c. Motor: Pittsburgh, Chicago, Gary, 6.05c; Granite City, 6.15c. Dynamo: Pittsburgh, 6.75c; Granite City, 6.85c. Transformer 72, 7.25c; 65, 7.95c; 58, 8.65c; 52, 9.45c, Pittsburgh.

Strip

Hot-Rolled Strip: Pittsburgh, Chicago, Gary, Birmingham, Youngstown, base, 2.80c; Detroit, del., 2.95c; eastern Mich., del., 3.00c; San Francisco (base, del.), 3.605c; Los Angeles (base, del.), 3.60c.

Cold-Rolled Strip: 0.25 carbon and less: Pittsburgh, Cleveland, Youngstown, 3.55c; Chicago, base, 3.65c; Detroit, del. 3.70c; eastern Mich., 3.75c; Worcester, base, 3.75c-4.10c.

Cold-Finished Spring Steel: Pittsburgh, Cleveland base: 0.26-0.40 carbon, 3.55c; over 0.40 to 0.60 carbon, 5.05c; over 0.60 to 0.80, 5.65c; over 0.80 to 1.05, 7.15c; over 1.05 to 1.35, 9.45c; add 0.20c for Worcester.

Tin, Terne, Plate

Tin Plate: Pittsburgh, Chicago, Gary, Warren, O., per base box of 100 lb, 1.25 lb coating $6.60, 1.50 lb coating $6.80; Granite City, Birmingham, Sparrows Point, 1.25 lb coating $6.70, 1.50 lb coating $6.90.

Electrolytic Tin Plate: Pittsburgh, Gary, Warren, O., per base box of 100 lb, 0.25 lb tin, $5.80; 0.50 lb tin, $6.00; 0.75 lb tin $6.20; Granite City, Birmingham, Sparrows Point, $5.90, $6.10, $6.30, respectively.

Holloware Enameling Black Plate: Pittsburgh, Chicago, Gary, Warren, O., base 29-gage, 4.75c per lb; Granite City, Birmingham, Sparrows Point, 4.85c per lb.

Manufacturing Ternes (Special Coated): Pittsburgh, Chicago, Gary, per base box of 100 lb, $5.90; Granite City, Birmingham, Sparrows Point, $6.00.

Roofing Ternes: Pittsburgh, per package 112 sheets; 20 x 28 in., coating I.C. 8-lb $15.50.

Plates

Carbon Steel Plates: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Sparrows Point, 2.95c; Coatesville, Claymont, 3.40c; Geneva, Utah. (Base, del.), 3.125c; New York, del. 3.322c; Phila., del., 3.19c; Boston, del., 3.423c; St. Louis, del. 3.269c; San Francisco and Los Angeles, del., 3.67c for sizes and grades produced at Geneva, 3.76c for sizes and grades produced at Fontana, Calif. (Central Iron & Steel Co., Harrisburg, Pa. 4.45c, basing points.)

Floor Plates: Pittsburgh, Chicago, 4.20c.

Open-Hearth Alloy Plates: Pittsburgh, Chicago, 3.80c-4.137c; Coatesville, 4.50c.

Clad Steel Plates: Coatesville, 10% cladding: Nickel clad, 21.50c; inconel-clad, 30.00c; monel-clad, 24.00c. Pittsburgh, Washington, Coatesville, Pa., 20% stainless-clad, base prices including annealing and pickling: No. 304, 24.00c; No. 410, 22.00c; No. 430, 22.50c; No. 446, 29.00c.

Shapes

Structural Shapes: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Bethlehem, 2.80c; New York, del., 3.088c; Phila., del., 2.968c; Geneva, Utah (base, del.), 2.975c; Los Angeles (base, del.), 3.41c-3.47c for sizes produced at Torrance, Calif., beyond sizes at Geneva; Los Angeles and San Francisco, del., 3.52c for sizes produced at Geneva; San Francisco, del., 3.41c for sizes produced at Fontana, Calif.

Alloy Structural Shapes: Pittsburgh, Chicago, 3.55c.

Steel Piling: Pittsburgh, Chicago, Buffalo, $3.30 per 100 lb.

Wire and Wire Products

(Fob Pittsburgh, Chicago, Cleveland and Birmingham per 100 pounds).

Wire to Manufacturers in carloads

Bright, basic or bessemer..... **$3.55-3.80

Spring (except Birmingham)..... †$4.60

Wire Products to Trade

Nails

Standard and cement-coated.....‡$4.25-5.00

Galvanized .....‡$4.00-4.75

Staples, polished and galvanized....$4.25-5.00

Wire, Merchant Quality

Annealed (6 to 8 base) ..... ††$4.20

Galvanized (6 to 8 base) ..... ††$4.65

(Fob Pittsburgh, Chicago, Birmingham, per base column)

Woven fence, 15 gage and heavier....‡‡91-101

Barbed wire, 80-rod spool..... ‡‡101

Barbless wire, twisted 101

Fence Posts (no clamps) ..... ‡‡90

Bale ties, single loop..... ‡‡91

** Worcester, $3.65, Duluth, $3.60, base, San Francisco (base, del.), $4.56, bright basic only.

† Worcester $4.70, Duluth and Trenton, N. J., $4.85, base. San Francisco (base, del.) $5.63 for MB spring wire; $5.28 black premier.

‡ Worcester $4.55, Cleveland $4.35, base. San Francisco (base, del.) $5.33.

§ Duluth $4.00, Cleveland $4.10, base. San Francisco (base, del.) $5.08.

†† Worcester $4.30, annealed; $4.75, galvanized. Duluth $4.20, annealed; $4.65, galvanized. San Francisco (base, del.) $5.21, annealed; $5.66 galvanized.

‡‡ San Francisco (base, del.): Woven fence, 114; barbed wire, 121; bale ties, 115. Duluth (base): Woven fence, 91; barbed wire, 101; fence posts 90.

Rails, Supplies

Rails: Standard, over 60-lb fob mill, $2.75 per 100 lb. Light rails (billet), Pittsburgh, Birmingham, $3.10 per 100 lb; light rails (rail steel), Williamsport, Pa., Pittsburgh prices upon application.

Relaying, 60 lb and over fob warehouse $55-$56 per net ton.

Supplies: Track bolts, 7.00c; heat treated, 7.25c. Tie plates, $3.05 per 100 lb, fob mill; $3.40 base, Seattle; $3.20, base, Pittsburg, Calif. Splice bars, $3.25 per 100 lb, fob mill. Standard spikes, 4.85c; screw spikes, 6.75c. Axles, 4.50c.

Tubular Goods

Standard Steel Pipe: Base price in carlots, threaded and coupled, to consumers about $200 a net ton. Base discounts Pittsburgh on all types; Lorain on steel butt weld, and seamless; Gary, Ind., 2 points less on steel lap weld and 1 point less on steel butt weld on sizes produced in that district.

	Butt Weld		Butt Weld	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	46	19½	1	56	41½
¼	47	25	1¼	56½	42
⅜	44	22	1½	57	42½
½	50½	34½	2	57½	43
¾	53½	38½	2½ & 3	58	43½

	Lap Weld		Elec. Weld		Seamless	
In.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
2	49	34	48½	33½	48	33
2½-3	52	37	51½	36½	51	36
3½-6	54	39	53½	38½	53	38

Line Steel Pipe: Base price in carlots to consumers about $200 a net ton. Base discounts Pittsburgh and Lorain, O.

	Butt Weld		Butt Weld
In.		In.	
⅛	45	1	55
¼	46	1¼	55½
⅜	43	1½	56
½	49½	2	56½
¾	52½	2½ & 3	57

In.	Lap Weld	Elec. Weld	Seamless
2	48	47½	47
2½ & 3	51	50½	50
3½-6	53	52½	52
8	53½	53	52½
10	53	52½	52
12	52	51½	51

Boiler Tubes: Net base prices per 100 ft, fob Pittsburgh, in carload lots, minimum wall thickness, cut lengths 4 to 24 feet, inclusive.

		——Seamless——		—Elec. Weld—	
O.D. Sizes	B.W.G.	Hot Rolled	Cold Drawn	Hot Rolled	Cold Drawn
1"	13	....	$11.87	$11.51	$11.51
1¼"	13	....	14.06	11.48	13.64
1½"	13	$13.08	15.69	12.69	15.22
1¾"	13	14.88	17.85	14.43	17.31
2"	13	16.67	19.99	16.17	19.39
2¼"	13	18.58	22.29	18.02	21.62
2¼"	12	20.47	24.54	19.86	23.80
2½"	12	22.42	26.87	21.75	26.06
2¾"	12	23.76	28.48	23.05	27.63
3"	12	24.93	29.90	24.18	29.00
3¼"	11	29.03	34.81	28.16	33.77
3½"	11	31.17	37.39	30.23	36.27
4"	10	38.69	46.38	37.53	44.99
4½"	9	51.28	61.50	....	....
5"	9	59.39	71.18	....	....
6"	7	91.13	109.27	....	....

Pipe Cast Iron: Class B, 6-in. and over $74.50 per net ton, Birmingham; $79.50, Burlington, N. J.; $86.12, del. Chicago; 4-in. pipe, $5 higher; class A pipe, $5 a ton over Class B.

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago; add 15c per cwt, Lebanon, Pa. Additional discounts: 5 for carloads; 15 for full containers, except tire, step and plow bolts.

Carriage and Machine Bolts

½-in. and smaller; up to 6 in. in length	45 off
⅝ and ⅝ x 6-in. and shorter.....	46 off
¾-in. and larger x 6-in. and shorter...	43 off
All diameters longer than 6-in.	41 off
Tire bolts	35 off
Step bolts	43 off
Plow bolts	54 off
Lag bolts	
All diameters 6 in. and shorter	46 off
All diameters longer than 6 in.	44 off

Stove Bolts

In packages, nuts separate, 65-10 off; bulk 75 off on 15,000 of 3-in. and shorter, or 500● over 3-in., nuts separate.

Nuts

Semifinished hexagon	A.S. Light	A.S. Reg. and Heavy
⅞-in. and smaller.....	46 off	.....
½-in. and smaller.....	.....	44 ●ff
½-in.-1-in.	44 off	.....
⅝-in.-1-in.	.....	43 off
1⅛-in.-1½-in.	42 off	41 off
1⅝-in. and larger.....	.....	35 off

Additional discount of 15 for full containers.

Hexagon Cap Screws

(Packaged)

Upset 1-in. smaller by 6-in. and shorter (1020 bright)	53 off
Upset (1035 heat treated)	
⅝ and smaller x 6 and shorter.....	48 off
¾, ⅞, & 1 x 6 and shorter.....	44 off

Square Head Set Screws

Upset 1-in. and smaller.....	57 off
Headless, ¼-in. and larger.....	40 off
No. 10 and smaller	52 off

Rivets

Fob Pittsburgh, Cleveland, Chicago, Birmingham

Structural ½-in. and larger	5.65c
Lebanon, Pa.	5.80c
⅞-in. and under	55 off
Lebanon, Pa. .....55 off plus 15c per cwt.	

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $1-$2 off

Tool Steels

Tool Steel: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb; reg. carbon 16.00-17.00c; extra carbon 20.00c; special carbon 24.00c; oil-hardening 26.00c; high carbon-chromium 47.00c.

W	Cr	V	Mo	Base, Per lb
18.00	4	1	...	82.00c
1.5	4	1	8.5	59.00c
12	3	0.50	...	67.00c
6.40	4.15	1.90	5	63.00c
5.50	4.50	4	4.50	80.00c

Stainless Steels

Base, Cents per lb

Grade	Bars, Drawn Wire, Structurals	Plate	Sheets	Hot Rolled Strip	Cold Rolled Strip
CHROMIUM NICKEL STEELS					
301....	26.00c	29.50c	37.00c	22.00c	28.00c
302....	26.00	29.50	37.00	23.50	30.50
303....	28.50	31.50	39.00	29.50	36.00
304....	27.50	31.50	39.00	25.50	32.50
308....	31.50	37.00	44.50	31.00	38.00
309....	39.00	43.50	51.00	40.50	51.00
310....	53.50	56.50	57.50	53.00	61.00
316....	43.50	48.00	52.00	43.50	52.00
321....	31.50	37.00	44.50	32.00	41.50
347....	36.00	41.50	49.00	36.00	45.50
431....	21.00	24.00	31.50	19.00	24.50
440A..	26.00	31.00	36.50	26.00	30.50
STRAIGHT CHROMIUM STEEL					
403....	23.50	27.00	32.00	23.00	29.50
410....	20.50	23.50	29.00	18.50	24.00
416....	21.00	24.00	29.50	20.00	25.50
420....	26.00	31.00	36.50	26.00	39.50
430....	21.00	24.00	31.50	19.00	24.50
430F ..	21.50	24.50	32.00	20.50	27.00
442....	24.50	28.00	35.50	26.00	35.00
443....	24.50	28.00	35.50	26.00	35.00
446....	30.00	33.00	39.50	38.00	56.50
†501...	9.00	13.00	17.50	13.00	18.50
†502...	10.00	14.50	18.50	14.50	19.50
‡STAINLESS CLAD STEEL (20%)					
304....	....	24.00	22.00	....	....
410....	....	22.00	20.00	....	....
430....	....	22.50	20.50	....	....
446....	....	29.00	27.00	....	....

† Low chromium. ‡ Fob Pittsburgh and Washington, Pa.; plate prices include annealing and pickling.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., base	$40.00	$40.50	$41.00	$41.50
Newark, N. J., del.	42.208	42.708	43.208	43.708
Brooklyn, N. Y., del.	....	44.10	44.60	....
Philadelphia, del.	42.004	42.504	43.004	43.504
Birmingham, base	35.88†	36.38†	....	....
Baltimore, del.	....	44.32	....	....
Cincinnati, del.	....	40.74	....	....
Newark, N. J., del.	....	42.328	....	....
Philadelphia, del.	....	42.124	....	....
St. Louis, del.	....	40.77	....	....
Buffalo, base	40.00†	40.00†	40.50†	41.00
Boston, del.	47.776	47.776	48.276	....
Rochester, del.	42.22	42.22	42.72	43.22
Syracuse, del.	43.025	43.025	43.525	44.025
Chicago, base	37.50	38.00	38.50	39.00
Milwaukee, del.	39.08	39.58	40.08	40.58
Muskegon, Mich., del.	....	42.60	41.10	....
Cleveland, fob furnace	35.50†	36.00†	36.50†	37.00
Akron, del.	37.50	38.00	38.50	39.00
Duluth, base	38.00	38.50	39.00	39.50
Erie, Pa., base	37.50	38.00	38.50	39.00
Everett, Mass., base	....	45.00	45.50	....
Granite City, Ill., base	39.50	40.00	40.50	....
St. Louis, del.	40.33	40.83	....	....
‡**Neville Island, Pa.,** base	39.00	39.50	39.50	40.00
Pittsburgh, del., N.&S. Sides	39.996	40.496	40.496	40.996
Provo, Utah, base	36.00	36.50	....	....
Seattle, Tacoma, Wash., del.	....	43.03	....	....
Portland, Oreg., del.	....	43.03	....	....
Sharpsville, Pa., base	39.00	39.50	39.50	40.00
Steelton, Pa., base	40.00	40.50	41.00	41.50
Struthers, O., base	39.50	....	....	....
Swedeland, Pa., base	45.00	45.50	46.00	46.50
Toledo, O., base	37.50	38.00	38.50	39.00
Cincinnati, del.	41.70	42.20	....	....
Youngstown, O., base	36.00-38.00	36.50	36.50-39.50	37.00
Mansfield, O., del.	39.57	40.07	40.07	40.57

† Republic Steel Corp. quotes $3 a ton higher at Birmingham, effective Jan. 1, 1948; Republic quotes the same price for No. 2 foundry and malleable and $.50 lower for basic at Buffalo, and $3.75 higher at Cleveland, effective on shipments during week ended Jan. 11.

‡ To Neville Island base add: 79.2c for McKees Rocks, Pa., $1.212 Lawrenceville, Homestead, McKeesport, Monaco; $1.788 Oakmont; $1.596 Verona; $1.788 Brackenridge; 99.6c to Ambridge and Aliquippa.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent (base)....$47.50
6.51-7.00..$48.75 9.01- 9.50. 55.00
7.01-7.50.. 50.00 9.51-10.00. 56.25
7.51-8.00.. 51.25 10.01-10.50. 57.50
8.01-8.50.. 52.50 10.51-11.00. 58.75
8.51-9.00.. 53.75 11.01-11.50. 60.00

Fob Jackson, O., per gross ton; Buffalo base $3.25 higher. Buyer may use whichever base is more favorable.

Bessemer Ferrosilicon

Prices same as for blast furnace silvery iron, plus $1 per gross ton. **Electric Furnace Silvery Pig Iron:** Si 14.01-14.50%, $77.50, Jackson, O.; $78.75, Niagara Falls; Si 15.51-16.00%, $81, open-hearth, and $82 foundry grade, Keokuk, Iowa. Add $1 a ton for each additional 0.5% Si to 18%; 50c for each 0.5% Mn over 1%; $1 a ton for 0.045% max. phos.

Charcoal Pig Iron

Semi-cold blast, low phosphorus. Fob furnace, Lyles, Tenn...$50.00 (For higher silicon irons a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $39.00

Low Phosphorus

Steelton, Pa., Buffalo, Troy, N. Y., $46.00. Philadelphia, $48.592, delivered. Intermediate phosphorus, Central furnace, Cleveland, $39.00.

Differentials

Basing point prices are subject to following differentials:

Silicon: An additional charge of 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge of 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Metallurgical Coke

Price per Net Ton

Beehive Ovens

Connellsville, furnace	$12.00-$13.00
Connellsville, foundry	14.00- 15.00
New River, foundry	12.50
Wise county, foundry	11.15
Wise county, furnace	10.65

Oven Foundry Coke

Kearney, N. J., ovens	$18.75
Chicago, outside del.	18.00
Chicago, del.	19.10
Terre Haute, del.	18.05
Milwaukee, ovens	18.75
New England, del.	19.60
Birmingham, del.	15.76
Indianapolis, ovens	17.50
Cincinnati, del.	18.10
Ironton, O., ovens	16.00
Erie, Pa., del.	18.35
Painesville, O., ovens	17.10
Cleveland, del.	18.50
Buffalo, del.	18.75
Detroit, del.	18.25
Philadelphia, ovens	17.75
Swedeland, Pa., ovens	17.75
Portsmouth, O., ovens	16.00
Fairmont, W. Va., ovens	16.25
Pittsburgh, del.	18.21

Coal Chemicals

Spot, cents per gallon

Pure and 90% benzol	19.00†
Toluol, two degrees	23.00
Industrial xylol	25.00
Solvent naphtha	25.00

Per pound fob works

Phenol (car lots, returnable drums)	12.00
Do., less than carlots	12.75
Do., tank cars	11.00

Eastern plants, per pound

Naphthalene flakes, balls, bbl, to jobbers, "household use"	11.00

Per ton, bulk, fob plants

Sulphate of ammonia	$35.00

†Freight allowed up to 2 cents.

Refractories

Per 1000, fob shipping point

Net Prices

Fire Clay Brick

Super Duty

Pa., Mo., Ky.	$87.00

High Heat Duty

Pa., Ill., Md., Mo., Ky.	70.00
Ala., Ga.	70.00
N. J.	75.00

Intermediate Heat Duty

Ohio	64.00
Pa., Ill., Md., Mo., Ky.	64.00
Ala., Ga.	56.00
N. J.	67.00

Low-Heat Duty

Pa., Md., Ohio	56.00

Ladle Brick

(Pa., O., Va., Mo.)

Dry Press	47.00
Wire Cut	45.00

Malleable Bung Brick

All bases	80.00

Silica Brick

Pennsylvania	70.00
Joliet, E. Chicago	70.00
Birmingham, Ala.	70.00

Basic Brick

Net tons, fob Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	59.00
Chem. bonded chrome	59.00
Magnesite brick	81.00
Chem. bonded magnesite	70.00

Magnesite

Domestic dead-burned grains, net ton, fob Chewelah, Wash.

Bulk	24.00
Single bags	28.00

Dolomite

Domestic, dead-burned, bulk, net ton, fob Billmeyer, Blue Bell or Williams, Pa., Millville, W. Va., Nario, Millersville, Martin, Gibsonburg or Woodville, O., $11.05; Midwest (fob Thornton or McCook, Ill.), add $0.10; Missouri Valley (fob Dolly Siding, and Bonne Terre, Mo.), add $0.20.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$5.95
Old range nonbessemer	5.80
Mesabi bessemer	5.70
Mesabi nonbessemer	5.55
High phosphorus	5.55

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62% contract	15.20

Foreign Ore

Cents per unit, cif Atlantic ports

No. African low phos.	Nom.
Swedish basic, 60 to 68%	13.50
Spanish, No. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% fob Rio de Janeiro, nom.	5.50-6.50

Tungsten Ore

Wolframite and scheelite per short ton unit, duty paid	$26-$28

Manganese Ore

48-50%, duty paid, fob cars, New York, Philadelphia, Baltimore, Norfolk, Va., Mobile, Ala., New Orleans, 65.00c-67.00c.

Chrome Ore

Gross ton fob cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., and/or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African	
48% 2.8:1	$37.50
48% 3:1	39.00
48% no ratio	31.00
South African (Transvaal)	
44% no ratio	$25.50-$26.00
45% no ratio	26.50
48% no ratio	28.50
50% no ratio	29.50
Brazilian—nominal	
44% to 2.5:1 lump	$33.65
48% 3:1 lump	43.50
Rhodesian	
45% no ratio	$27-$27.50
48% no ratio	30.00
48% 3:1 lump	39.00
Domestic (seller's nearest rail)	
48% 3:1	$39.00

Molybdenum

Sulphide conc., lb., Mo. cont., Mines	$0.75

Fluorspar

Metallurgical grade, fob shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $35; less than 60% $32.

HIGH-STRENGTH—LOW-ALLOY STEELS

Prices in dollars per 100 pounds

	Pittsburgh	Chicago	Gary	Youngstown	Sparrows Point	Buffalo	Bethlehem	Canton	Massillon
Sheets, Hot-Rolled	4.30	4.30	4.30	4.30	4.30	4.30	...	...	...
Cold-Rolled	5.30	5.30	5.30	5.30	...	5.30	...	...	...
Galvanized	5.85	...	...	...	...	...	...	...	...
Strip, Hot-Rolled	4.30	4.30	4.30	4.30	...	...	...	...	...
Cold-Rolled	5.30	5.30†	5.30†	5.30	...	...	...	...	...
Shapes, structural	4.30	4.30	...	4.30	...	...	4.30	...	...
Plates	4.55	4.55	4.55	...	4.55	...	...	...	...
Bars, Small Shapes	4.45	4.45	4.45	4.45	...	4.45	...	4.45	4.45

†Nax High Tensile, produced by Great Lakes Steel Corp., quoted 10 cents higher.

WAREHOUSE STEEL PRICES

Prices, cents per pound, for delivery within switching limits, subject to extras.

	SHEETS					STRIP		BARS				PLATES	
	H-R 10G	C-R 10G	C-R 17G	Gal. *10G	Gal. *24G	†H-R	†C-R	H-R Rds. ⅜" to 3"	C-F Rds. ½"& up	H-R Alloy (**4140)	Structural Shapes	Carbon ⅜"-¾"	Floor ⅜" & Thicker
Boston (city)	4.96	6.03[4]	5.73[4]	6.16[4]	7.41[4]	5.04	6.73	4.95	5.63	7.22	4.82	5.11	6.79
New York (city)	4.96	6.18	5.88	6.16	7.41	5.59	....	5.08	5.63	7.23	4.78	5.11	6.82
New York (country)	4.81	6.03	5.73	6.01	7.26	5.44	....	4.93	....	....	4.63	4.96	6.67
Philadelphia (city)	4.71	6.33	5.93	5.91	7.16	4.83	5.73	4.88	5.58	7.17[9]	4.57	4.86	6.33
Philadelphia (country)	4.61	6.23	5.83	....	....	4.73	5.63	4.78	....	....	4.47	4.76	6.23
Baltimore (city)	4.31†	5.91	5.61	5.71	6.96	4.76	....	4.81	5.51	....	4.68	4.76	6.26
Baltimore (country)	4.21†	5.81	5.51	5.50	6.75	4.66	....	4.71	....	....	4.58	4.66	6.16
Washington (city)	4.75	....	....	....	....	4.95	....	5.00	5.60[12]	....	4.90	4.95	6.60
Washington (country)	4.65	....	....	....	....	4.85	....	4.90	....	....	4.80	4.85	6.50
Norfolk, Va.	4.80	....	....	....	....	....	....	5.10	5.90	....	5.05	5.05	6.80
Memphis, Tenn. (city)	4.82[20]§§	5.87[20]†	....	6.37	....	5.02[20]	....	4.97[20]	5.87	....	4.97[20]	5.17[20]	6.87[20]
Memphis, Tenn. (country)	4.72[20]§§	5.77[20]†	....	6.27	....	4.92[20]	....	4.87[20]	5.77	....	4.87[20]	5.07[20]	6.77[20]
Buffalo (city)	4.45	....	5.20[8]	6.00	....	4.70	5.65	4.40	5.10	6.65	4.40	4.95	6.20
Buffalo (country)	4.30	....	5.05[8]	5.55	....	4.25	5.50	4.25	4.95	6.65	4.25	4.45	5.75
Pittsburgh (city)	4.25§§	....	5.10[8]†	5.65	6.90	4.35	5.35	4.40	5.10	6.85	4.40	4.60	5.90
Pittsburgh (country)	4.10§§	....	4.95[8]†	5.50	6.75	4.20	5.20	4.25	4.95	6.85	4.25	4.45	5.75
Cleveland (city)	4.45	5.50[8]	5.20[8]	5.78	7.03	4.52	5.35	4.40	5.10	6.85	4.65	4.60	6.15
Cleveland (country)	4.30	5.35[8]	5.05[8]	....	....	....	5.20	4.25	4.95	....	....	4.45	....
Cincinnati	4.671	5.516[8]	....	5.716	6.466	4.694	....	4.703	5.353	....	4.744	4.903	6.244
Detroit	4.55	....	5.30	....	....	4.72	5.63	4.50	5.22	7.10	4.77	4.88	6.28
Indianapolis	4.55	5.32[8]	....	5.87	7.12	4.65	5.90	4.70‡‡	5.40	8.85	4.70	4.90	6.35
Chicago (city)	4.45	5.50[8]	5.20[8]	5.65	6.90	4.35	5.45	4.40	5.10	6.65[9]	4.40	4.60	6.05
Chicago (country)	4.30	5.35[8]	5.05[8]	5.50	6.75	4.20	5.30	4.25	4.95	6.65[9]	4.25	4.45	5.90
Milwaukee	4.629	5.679[8]	5.379[8]	5.829	7.079	4.529	5.629	4.579	5.279	6.979[9]	4.579	4.779	6.229
St. Louis	4.78	5.83[9]	5.53[9]	6.02	7.27	4.68	5.82	4.73	5.47[12]	....	4.73	4.93	6.38
Birmingham (city)	4.45[20]§§	....	....	5.65	....	4.45[20]	....	4.40[20]	5.93[22]	....	4.40	4.65	6.86
Birmingham (country)	4.30[20]§§	....	....	5.50	....	4.30[20]	....	4.25[20]	....	....	4.25	4.50	....
New Orleans	4.98[20]**	....	6.29[18]	....	....	5.18[20]	....	5.13[20]††	6.29[11]	....	5.03[20]††	5.33[20]	7.29[20]
Omaha, Nebr.	5.365	....	....	6.565	7.815	5.265	....	5.315	6.015	....	5.315	5.515	6.965
Houston, Tex.	5.50	....	....	5.50	7.70	5.25	....	5.30	6.80[12]	7.70	5.85	5.35	6.50
Los Angeles (city)	5.75	7.75[8]	7.45[8]	7.40	8.80	6.05	8.70	5.50	7.35[23]	9.35[16]	5.35	5.55	7.65
Los Angeles (country)	5.60	7.60[8]	7.30[8]	7.25	8.65	5.90	8.55	5.35	7.20[1]	9.20[16]	5.20	5.40	7.50
San Francisco	5.20[21]	6.65[8]	....	6.85[3]	7.75[3]	5.75[21]	8.70[15]	5.05[21]	7.00[12]	9.35	5.20[21]	5.30[21]	7.10[21]
Seattle, Tacoma, Wash.	5.30[17]§§	....	7.10[3]‡	6.70	....	5.60[17]	....	5.45[17]	7.45[19]	8.50[12]	5.25[17]	5.45[17]	7.55[17]
Portland, Oreg.	5.30[17]§§	....	7.10[3]‡	6.70	....	5.60[17]	....	5.45[17]	7.45[19]	....	5.25[17]	5.45[17]	7.55[17]

Base Quantities: 400 to 1999 lb except as noted: Cold-rolled strip, 2000 lb and over, cold finished bars, 1000 lb and over; galvanized sheets, 450 to 1499 lb; [1]—1500 lb and over; [2]—1000 to 4999 lb; [4]—three to 24 bundles; [5]—450 to 1499 lb; [8]—400 to 1499 lb; [9]—1000 to 1999 lb; [11]—1000 to 39,999 lb; [12]—1000 lb and over; [18]—2000 lb and over; [17]—300 to 9999 lb; [18]—1500 to 1999 lb; [19]—1500 to 39,999 lb; [20]—400 to 3999 lb; [21]—400 lb and over; [22]—500 to 1499 lb.

† Includes gage and coating extra, except Birmingham (coating extra excluded); ‡does not include gage extras; §15 gage; **as rolled; ††add 0.40 for sizes not rolled in Birmingham; ‡‡ add 15c for 100 lb for slow moving items; §§18 gage and heavier.

PRICES OF LEADING FERROALLOYS PRODUCTS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $47, Palmerton, Pa., $51, Pittsburgh. 16% to 19% Mn., $46, Palmerton, $50, Pittsburgh.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.). Carload, lump, bulk $145 per gross ton of alloy, carload packed $157, ton lot $172, less ton $189; fob New Orleans, Mobile, Philadelphia, Baltimore, or New York. Carload, lump, bulk $151, fob cars Pittsburgh, including 50c switching charge. Add, or subtract, $1.80 for each 1%, or fraction thereof, of contained manganese over 82% or under 78%.

West Coast Prices: Carload (80,000 lb or more), lump, bulk, same price and basing points as above. All other prices for shipment from Pacific Coast warehouses, add $26.21 to above prices. Delivery is fob Portland, Los Angeles, South San Francisco, or Seattle warehouses, with railroad freight allowed on shipments of 25 gross tons or more.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Eastern Zone, carload, lump, bulk, max. 0.10% C, 22.5c per lb of contained Mn, carload packed 23.25c, ton lot 24.35c, less ton 25.55c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.7c for c.l. and 4.4c for l.c.l. Freight allowed. Deduct 0.5c for max 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 0.75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Eastern Zone, carload, lump, bulk 16.5c per lb of contained Mn, carload packed 17.25c, ton lot 18.35c, less ton 19.55c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.7c for c.l. and 4.4c for l.c.l. Freight allowed. Spot, add 0.25c.

Manganese Metal: (Mn 96% min., Fe 2% max., Si 1% max., C 0.20% max.). Eastern Zone, carload, 2" x D, bulk 32c per lb of metal, carload packed 32.5c, ton lot 34c, less ton 36c; Central, add 1c for c.l. and 1.45c for l.c.l.; Western, add 1.45c for c.l. and 2.4c for l.c.l. Freight allowed. Spot, add 2c.

Silicomanganese: (Mn 65-70%). Eastern Zone, contract, lump, bulk, 1.50% C grade, 17-20% Si, 7.8c per lb of alloy, carload packed, 8.55c, ton lot 9.45c, less ton 10.45c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. For 2.0% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Eastern Zone, contract, c.l., lump, bulk 18.6c per lb of contained Cr, c.l., packed 19.5c, ton lot 20.65c, less ton 22.05c; Central, add 0.4c for c.l. and 1.3c for l.c.l.; Western, add 0.55c for c.l. and 2.1c for l.c.l. Freight allowed. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Eastern Zone, contract, c.l., 8MxD, bulk 20.1c per lb of contained Cr, c.l., packed 21.0c, ton lot 22.35c, less ton 24.1c; Central, add 0.4c for c.l. and 1.3c for l.c.l.; Western, add 0.55c for c.l. and 2.1c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Eastern Zone, contract, carload, lump, bulk, max. 0.03% C 28.5c per lb of contained Cr, 0.04% C 27.5c, 0.05% C 27.0c, 0.06% C 26.5c, 0.10 % C 26.0c, 0.15% C 25.5c, 0.20% C 25.25c, 0.50% C 25.0c, 1% C 24.5c, 2% C 24.25c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c; Central, add 0.4c for c.l. and 0.65c for l.c.l.; Western, add 0.5c for c.l. and 1.85c for l.c.l. Freight allowed. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, add C 1.25% max.). Eastern Zone, contract, carload, lump, bulk 25c per lb of contained chromium, carload, packed 26.1c, ton lot 27.3c, less ton 29.1c; Central, add 0.4c for c.l. and 0.65c for l.c.l.; Western, add 0.5c for c.l. and 1.85c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 2c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 2c for each 0.25% of N above 0.75%.

Chromium Metal: (Min. 97% Cr and 1% Fe). Eastern Zone, contract, carload, 1" x D, packed, max. 0.50% C grade, 93c per lb of contained chromium, ton lot 94.5c, less ton 97c; Central, add 1.5c for c.l. and 2.5c for l.c.l.; Western, add 2.75c for c.l. and 4.5c for l.c.l. Freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 9.3c per lb of contained Si, carload packed 10.9c, ton lot 12.35c, less ton 14.0c; Central, add 0.5c for c.l. and 1.25c for l.c.l.; Western, add 0.7c for c.l. and 1.8c for l.c.l. Freight allowed. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.). Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 11.8c per lb of contained Si, carload packed 13.1c, ton lot 14.25c, less ton 15.5c; Central, add 0.3c for c.l. add 0.75c for l.c.l.; Western, add 1.05c for c.l. and 5c for l.c.l. Freight allowed. Spot, add 0.3c.

85% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 13.3c per lb of contained Si, carload packed 14.55c, ton lot 15.55c, less ton 16.7c; Central, add 0.3c for c.l. and 0.7c for l.c.l.; Western, add 1.05c for c.l. and 4.4c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk, 15c per lb of contained Si, carload packed 16.2c, ton lot 17.15c, less ton 18.2c; Central, add 0.3c for c.l. and 0.65c for l.c.l.; Western, add 1c for c.l. and 4c for l.c.l. Freight allowed. Spot, add 0.25c.

Low - Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Over 97% Si and 1% max. Fe). Eastern Zone, c.l., lump, bulk, regular, 17.3c per lb of Si, c.l. packed 18.5c, ton lot 19.4c, less ton 20.4c; Central, add 0.6c for c.l. and 2.25c for l.c.l.; Western, add 1.2c for c.l. and 4c for l.c.l. Add 1c for max. 0.20% calcium grade. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade, analyzing over 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract basis fob Niagara Falls, N. Y., lump per lb c.l. 6.90c; ton lots packed, 7.40c; 200 to 1999 lb, 8.15c; smaller lots, 8.65c. Spot up 0.5c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Eastern Zone, contract, carload, bulk, 12.5c per lb of briquet, carload packed 13.2c, ton lot 14.0c, less ton 14.9c; Central, add 0.25c for c.l. and 0.9c for l.c.l.; Western, add 0.35c for c.l. and 1.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Eastern Zone, contract, carload, bulk, 8.7c per lb of briquet, c.l. packaged 9.5c, ton lot 10.3c, less ton 11.2c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Eastern Zone, contract, c.l., bulk 8.75c per lb of briquet, c.l. packed 9.55c, ton lot 10.35c, less ton 11.25c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Eastern Zone, contract, carload, bulk 5.1c per lb of briquet, c.l. packed 5.25c, ton lot 6.7c, less ton 7.6c. **(Small size**—weighing approx. 2½ lb and containing exactly 1 lb of Si). Eastern Zone, carload, bulk 5.25c, c.l. packed 6.05c, ton lot 6.85c, less ton 7.75c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.45c for c.l. and 0.9c for l.c.l. Freight allowed. Add 0.25c for notching, small size only. Spot, add 0.25c.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Eastern Zone, contract, carload, lump, bulk 17.50c per lb of alloy, carload packed 19.0c, ton lot 19.8c, less ton 20.8c; Central, add 0.5c for c.l. and 0.85c for l.c.l.; Western, add 2.55c for c.l. and 2.6c for l.c.l. Freight allowed. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Eastern Zone, contract, carload, lump, bulk 16.25c per lb of alloy, carload packed 16.45c, ton lot 19.35c, less ton 20.85c; Central, add 0.5c for c.l. and 0.75c for l.c.l.; Western, add 2.55c for c.l. and 2.90c for l.c.l. Freight allowed. Spot, add 0.25c.

VANADIUM ALLOYS

Ferrovanadium: Open Hearth Grade (Va 50-55%, Si 8% max., C 3% max.). Eastern Zone, contract, any quantity, $2.90 per lb of contained Va; Central, add 2c for c.l. and 3c for l.c.l.; Western, add 6c for c.l and 9c for l.c.l. Freight allowed. Spot, add 10c. **Special Grade** (Va 50-55%, Si 4% max., C 1% max.), $3. **High Speed Grade** (Va 50-55%, Si 1.50% max., C .20% max.), $3.10.

Vanadium Oxide: All Zones, contract, less carload lots, $1.20 per lb of contained V_2O_5. Spot, add 5c.

Grainal: Vanadium Grainal No. 1, 93c; No. 6, 63c; No. 79, 45c; all fob Bridgeville, Pa., usual freight allowance.

TITANIUM ALLOYS

Ferrotitanium: (Ti 20-25%, Al 3% max., Si 4% max., C 0.10% max.). Eastern Zone, contract, ton lot, 2" x D, $1.35 per lb of contained Ti, less ton $1.40. (Ti 40-45%, Al 7% max., Si 4% max., C 0.10% max.). Ton lot $1.23, less ton $1.25; Central, add 4c for 20-25% Ti grade, and 2.1c for 40-45% grade; Western, add 13.5c for 20-25% Ti grade, and 7.2c for 40-45% grade. Freight allowed. Spot, add 5c.

Ferrotitanium, High-Carbon: (15-20%). Contract basis, per net ton, fob Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis, 6.8% C, $142.50; 3-5% C, $157.50.

TUNGSTEN ALLOYS

Ferrotungsten: (W 70-80%). Eastern Zone, contract, 10,000 lb W or more, $2.25 per lb of contained W; 200 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot add 2c.

Tungsten Powder: (W 98.8% min.). Eastern Zone, contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Eastern Zone, contract, c.l., lump, bulk 6c per lb of alloy, c.l. packed 6.75c, ton lot 7.5c, less ton 8.35c; Central, add 0.25c for c.l. and 1.1c for l.c.l.; Western, add 0.6c for c.l. and 3.95c for l.c.l. Freight allowed. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Eastern Zone, contract, carload, lump, packed 18.4c per lb of alloy, ton lot 19.15c, less ton 20.4c; Central, add 0.6c for c.l. and 1.05c for l.c.l.; Western add 3.05c for c.l. and 4c for l.c.l. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Eastern Zone, contract, 100 lb or more, 1" x D, $1.20 per lb of alloy, freight allowed. Less than 100 lb $1.30; Central, add 0.75c; Western, add 2.9c, freight allowed. Spot add 5c.

Borosil: (3 to 4% B, 40 to 45% Si). $6.25 per lb contained B, fob Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, fob Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Mn 5% max., Si 8% max., C 0.5% max.). Eastern Zone, contract, ton lot, 2" x D, $2.50 per lb of contained Cb, less ton $2.55; Central, add 1.65c; Western, add 6.45c. Freight allowed. Spot, add 10c.

CMSZ Mixes: No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Eastern Zone, carload, 12 M x D, carload packed 17.25c per lb of material, ton lot 18.00c, less ton 19.25c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0.75%). Eastern Zone, carload, packed, 1" x D, 39c per lb of alloy, ton lot 41c, less ton 43c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Eastern Zone, contract, carload, packed, ½" x 12 M, 15.0c per lb of alloy, ton lot 15.75c, less ton 17.0c; Central add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed. Spot, add 0.25c.

Simanal: (Approx. 20% each Si, Mn, Al) Packed, lump, carload 9c, ton lots 9.25c, smaller lots 9.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus: 17-19% based on 18% P content with unitage of $3 for each 1% of P above or below the base) Gross tons per carload fob sellers' works, with freight equalized with Rockdale, Tenn.; contract price $58.50, spot $62.25.

Ferromolybdenum: (55-75%). Per lb, contained Mo, fob Langeloth and Washington, Pa., furnace, any quantity 95.00c.

Increase in Zinc Prices Believed Imminent

NEW YORK—An advance of a cent to a cent and a half in zinc prices is believed imminent as Tri-State ore producers consider an increase in concentrate prices. Other nonferrous metals prices remain steady.

ZINC—Prospects for an upturn in zinc prices are based on belief producers in the big zinc producing Tri-State district with headquarters at Joplin, Mo., plan to raise the price of 60 per cent concentrate from $70.35 to $80 a ton. On the basis of the normal ratio of zinc concentrate costs to slab zinc this would indicate a quotation of about 12c a lb, East St. Louis, for prime western grade, compared with 10.50c at present.

As the result of the increase in freight rates, the prices for prime western, brass special and intermediate grades of zinc, delivered New York, have been raised 5 points, or $1 a ton. Delivered prices for regular high grade and special high grade is not likely to be changed owing to the fact that first quarter contracts for these have already been signed at the old price.

TIN—The British Ministry of Supply has raised the price of tin in the United Kingdom by £9 a ton, equivalent to 1⅝c a lb. The increase is reported to have resulted from the recent Bolivia - United States agreement under which this country will pay higher prices for tin during 1948 and 1949.

Tri-State ore producers reported considering advance in concentrate quotations

The Tin Sales Corp. under direction of the Office of Metals Reserve-RFC is continuing to issue contracts against January allocations on the basis of 94c for grade A tin, unchanged since the price was advanced 14c on Dec. 19.

COPPER—Sellers generally believe the recent freight rate increase will necessitate no adjustment in the refinery differential. Phelps Dodge Refining Corp. has stated no increase will be necessary and it is believed other sellers hold the same opinion.

LEAD — Consumers' bookings of lead for January delivery account for about 90 per cent of the supplies that will be available for delivery during the month. Opening of books for February is expected to be slightly delayed until the supply situation is clarified.

NICKEL—Production of nickel in Canada is expected to increase in 1948 as European countries increase purchases, due to aid under the European Recovery Plan. During the past year, sales by International Nickel to the United States increased sharply, while those to Europe were below normal. Previously announced reduction in price of 1.25c on sales to the U. S. became effective Jan. 1.

ALUMINUM — Production in 1947 is estimated by Bureau of Mines to have totaled 570,000 short tons of primary metal, an increase of 39 per cent over 1946. Strengthened demand in the latter part of the year could not be matched by augmented production due to power shortages. A 12 per cent gain in domestic bauxite was insufficient to meet demand and necessitated the highest rate of imports in history.

MAGNESIUM—Primary output of metal in 1947 of 12,400 tons was overshadowed by a stock of some 75,000 tons of bomb-body and aircraft scrap.

FERROALLOY METALS—Bureau of Mines reports production of molybdenum increased 29 per cent in 1947 over 1946 and vanadium output increased 84 per cent, both recovering to the 1940 level. Domestic output of manganese, chromium and tungsten ores declined 3, 63 and 42 per cent, respectively.

NONFERROUS METAL PRICES

Copper: Electrolytic, carloads 21.50c, delivered Conn.; Lake, 21.62½c del. Conn. Dealers may add ¾c for 5000 lb to carload; 1c 1000-4999 lb; 1½c, 500-999 lb; 2c 0-499 lb. Casting, nom., refinery, 20,000 lb or more; nom., less than 20,000 lb.

Brass Ingot: 85-5-5-5 (No. 115) 18.50-19.00c; 88-10-2 (No. 215) 28.50c; 80-10-10 (No. 305) 24.00c; No. 1 yellow (No. 405) 14.50-15.50c; carlot prices, including 25c per 100 lb freight allowance; add ¼c for less than carloads.

Zinc: Prime western 10.50c, brass special 10.75c, intermediate 11.00c, E. St. Louis; high grade 11.50c, del., carlots. For 20,000 lb to carlots add 0.15c; 10,000-20,000 lb 0.25c; 2000-10,000 lb 0.4c; under 2000 lb 0.50c.

Lead: Common 14.80c-14.85c, chemical 14.90c, corroding 14.90c, E. St. Louis for carlots.

Primary Aluminum: 99% plus, ingots 15.00c del., pigs 14.00c del.; metallurgical 94% min. 13.50c del. Base 10,000 lb and over; add ½c 2000-9999 lb; 1c less through 2000 lb.

Secondary Aluminum: Piston alloy (No. 122 type) 15.75-16.25c; No. 12 foundry alloy (No. 2 grade) 15.50-15.75; steel deoxidizing grades, notch bars, granulated or shot: Grade 1 (95-97½%) 15.50-16.00c; grade 2 (92-95%) 14.50-15.00; grade 3 (90-92%) 14.25-14.75c; grade 4 (85-90%) 14.00-14.50c. Above prices for 30,000 lb or more; add ¼c 10,000-30,000 lb; ½c 5000-10,000 lb; ¾c 1000-5000 lb; 1¼c less than 1000 lb. Prices include freight at carload rate up to 75c per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots (4-notch, about 20 lb), 10,000 lb and over, 20.50c, fob Freeport, Tex.; 2000 to 9999 lb, 21.50c; 100 to 1999 lb, 22.50c. Extruded rounds, 12 inches long, 1.312 inches in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 to 4000 lb, 35.00-36.00c.

Tin: Prices ex-dock, New York in 5-ton lots. Add 1 cent for 2240-11,199 lb, 1½c 1000-2239, 2½c 500-999, 3c under 500. Grade A, 99.8% or higher (including Straits), 94.00c; Grade B, 99.8% or higher, not meeting specifications for Grade A, with 0.05% max. arsenic, 93.85c; Grade C, 99.65-99.79% incl. 93.50c; 99.00-99.64% 93.50c and 98.00-98.99%, 92.60c for tin content.

Antimony: American bulk carlots fob Laredo, Tex., 99.0% to 99.8% and 99.8% and over but not meeting specifications below, 33.00c; 99.8% and over (arsenic, 0.05% max.; other impurities, 0.1% max.) 33.50c, effective as of Mar. 15. On producers' sales add ¼c for less than carload to 10,000 lb; ½c for 224-999 lb; add 2c for 223 lb and less; on sales by dealers, distributors, and jobbers add ½c, 1c, and 3c, respectively.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked 33.75c lb; 25 lb pigs produced from electrolytic cathodes 35.25c lb; shot produced from electrolytic cathodes 36.25c lb; "F" nickel shots or ingots for addition to cast iron 34.25c lb. Prices include import duty.

Mercury: Open market, spot, New York, $79-$81 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, 20.50c per lb contained Be.

Cadmium: Bars, ingots, pencils, pigs, plates, rods, slabs, sticks, and all other "regular" straight or flat forms $1.75 lb, del.; anodes, balls, discs and all other special or patented shapes, $1.80.

Cobalt: 97-98%, $1.65 lb for 550 lb (keg) $1.67 lb for 100 lb (case); $1.72 lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Indium: 99.9%, $2.25 per troy ounce.

Silver: Open market, N. Y., 74.62½c, per ounce.

Platinum: $66-$69 per ounce.

Palladium: $24 per troy ounce.

Iridium: $80-$90 per troy ounce.

Rolled, Drawn, Extruded Products

Copper and brass product prices are fob mill, with freight prepaid on 200 lb or more.

Sheet: Copper 33.68c; yellow brass 29.63c; commercial bronze, 95% 33.72c, 90% 33.11c, red brass, 85% 31.99c, 80% 31.38c; best quality 30.64c; Everdur, Duronze, Herculoy or equiv., cold-drawn, 38.46c; nickel silver, 18%, 42.49c; phosphor bronze, grade A, 5%, 52.00c.

Rods: Copper, hot rolled 30.03c, cold drawn 31.03c; yellow brass, free cutting, 24.39c; commercial bronze, 95% 33.41c, 90% 32.80c; red brass, 85% 31.68c, 80% 31.07c; best quality 30.33c.

Seamless Tubing: Copper 33.72c; yellow brass 32.39c; commercial bronze 90% 35.52c; red brass 85% 34.65c, 80% 34.04c; best quality brass 33.95c.

Wire: Yellow brass 29.92c; commercial bronze, 95% 34.01c, 90% 33.40c; red brass, 85% 32.28c, 80% 31.67c; best quality brass 30.93c.

Copper Wire: Bare, soft, fob eastern mills, carlots 26.92c, less carlots 27.42c; weatherproof, fob eastern mills, carlots 27.60c, less carlots 28.10c; magnet, delivered, carlots 29.75c-31.13c, 15,000 lb or more 30.00c-31.38c, less carlots 30.50c-31.88c.

Aluminum Sheets and Circles: 2s and 3s flats, mill finish, base 30,000 lb or more, fob shipping point. Actual transportation charges (not to exceed lowest carload rail freight rate) are deducted on orders for domestic delivery of 500 lb or more of one product to one destination. Widths from 12 in. and diameters from 9 in. to indicated maximum sizes. Prices, cents per lb, effective Jan. 30, 1947.

B. & S. Gage	Max. Width or Diam.	Sheet Base	Circle Base
0.0249"-7	48"	23.70	26.20
8-10	48"	24.20	26.70
11-12	26"	24.70	27.50
13-14	26"	24.90	27.90
15-16	26"	25.10	28.20
17-18	26"	25.40	28.60
19-20	24"	25.70	29.00
21-22	24"	26.10	29.50
23-24	24"	26.60	30.20
25	24"	27.10	30.90
26	24"	27.80	31.90
27	24"	28.50	33.00
28	24"	29.20	33.70
29	24"	30.00	34.70
30	24"	30.80	35.80

Lead Products: Prices to jobbers: Sheets, full rolls, 140 sq ft or more, 18.25c; add per hundredweight, 25c, 80 to 140 sq ft; 50c, 20 to 80 sq ft; 75c, 10 to 20 sq ft and circles. Pipe: Full coils 17.50c; cut coils 17.75c. Lead Traps and Bends: List plus 42%.

Zinc Products: Sheet, 15.50c, fob mill, 36,000 lb and over. Ribbon zinc in coils, 14.50c, fob mill, 36,000 lb and over. Plates, not over 12-in., 13.50c; over 12-in., 14.50c.

Plating Materials

Chromic Acid: 99.75%, flake, fob Philadelphia, carloads, 21.00c; 5 tons and over 21.50c; 1 to 5 tons, 22.00c; less than 1 ton, 22.50c.

Copper Anodes: Base, 2000 to 5000 lb; fob shipping point, freight allowed: Flat untrimmed, 30.59c; oval, 30.09c; electrodeposited, 29.84c; cast, 29.59c.

Copper Carbonate: 52-54% metallic Cu, 50 lb bags, 26.50c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 45.00c fob Cleveland.

Sodium Cyanide: 96-98%, ½-oz ball, in 100 or 200 lb drums, 1 to 400 lb, 16.00c, 500 lb and over, 15.00c, fob Cleveland; 1 cent less, fob Niagara Falls.

Nickel Anodes: Rolled oval, carbonized, carloads, 48.00c; 10,000 to 30,000 lb, 49.00c; 3000 to 10,000 lb, 50.00c; 500 to 3000 lb, 51.00c; 100 to 500 lb, 53.00c; under 100 lb, 56.00c; add 1 cent for rolled depolarized.

Nickel Chloride: 100-lb kegs, 22.00c; 275-lb bbls, 20.00c.

Tin Anodes: Bar, 1000 lb and over 92.50c; 500 to 1000 lb, 93.00c; 200 to 5000 lb, 93.50c; less than 200 lb, 95.00c; ball, 1000 lb and over, 94.75c; 500 to 1000 lb, 95.25c; 200 to 500 lb, 95.75c; less than 200 lb, 97.25c, fob Sewaren, N. J.

Tin Chloride: Fob Grasselli, N. J., 625 lb bbls., price on application.

Sodium Stannate: To all consumers: in 200 or 500 lb drums, 49.50c; 100 lb, 50.50c; 50 lb, 55.00c; 25 lb, 57.50c.
To consumers other than automobile, radio and refrigerator makers: 1500 lb, 45.85c; 600 to 1400 lb, 48.50c.
To automobile, radio and refrigerator makers: 10,000 lb and over, 44.50c; 2000 to 9999 lb, 45.50c; 1000 to 1999, 46.50c; 600 to 999 lb, 48.50c.

Zinc Cyanide: 100-lb drums 36.00c, fob Cleveland; 35.00c, fob Niagara Falls.

Scrap Metals

BRASS MILL ALLOWANCES

(Based on 21.50c, Conn., for copper)
Prices for less than 15,000 lb fob shipping point. Add ¾c for 15,000-40,000 lb; 1c for 40,000 or more.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	19.125	19.125	18.375
Yellow brass	15.125	14.875	14.250
Commercial Bronze			
95%	18.000	17.750	17.250
90%	17.500	17.250	16.750
Red brass			
85%	17.250	17.000	16.500
80%	16.875	16.625	16.125
Best Quality (71-79%)	16.125	15.875	15.375
Muntz Metal	14.125	13.875	13.375
Nickel silver, 5%	16.125	15.875	8.063
Phos. bronze, A, B	20.000	19.750	18.750
Naval brass	14.500	14.250	13.750
Manganese bronze	14.500	14.250	13.625

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, fob shipping point, carload lots)

No. 1 copper 18.50, No. 2 copper 17.50, light copper 16.50, composition red brass 14.50, auto radiators 11.50, heavy yellow brass 10.25, brass pipe 11.50.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 18.75, No. 2 copper 17.75, light copper, 16.50-16.75, refinery brass (60% copper), per dry copper content less $5 smelting charge for brass analyzing 60 per cent or more, 15.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots or more)

Copper and Brass: Heavy copper and wire No. 1 16.50-17.00, No. 2 15.50-16.00, light copper 14.50, No. 1 composition red brass 12.00-12.50, No. 1 composition turnings 11.50, mixed brass turnings 8.00, new brass clippings nom. 12.00-12.50, No. 1 brass rod turnings 10.00-10.50, light brass 6.00-6.50, heavy yellow brass 8.25-8.50, new brass rod ends 10.50-11.00, auto radiators, unsweated 9.50-9.75, cocks and faucets 9.50-9.75, brass pipe 9.25-9.50.

Lead: Heavy 12.00, battery plates 6.75-7.00, linotype and stereotype 14.50-15.00, electrotype 12.00-12.50, mixed babbitt 12.50-13.00, solder joints 16.50-17.00.

Zinc: Old zinc 5.00-5.25; new die cast scrap 4.50-5.00, old die cast scrap 2.50-3.00.

Tin: No. 1 pewter 55.00-57.00, block tin pipe 77.00-78.00, auto babbitt 45.00-47.00, No. 1 babbitt 45.00-48.00, siphon tops 45.00-47.00.

Aluminum: Clippings, 2S 8.50-9.00, old sheets 6.50-7.00, crankcases 6.50-7.00, borings and turnings 2.00-2.50, pistons, free of struts, 5.50-6.00.

Nickel: Anodes 16.00-17.00, turnings 12.50-13.00, rod ends 16.00-17.00.

Monel: Clippings 12.00-12.50, turnings 7.00-7.25, old sheets 10.00-10.50, rods 10.00-10.50, castings 9.00.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Dec. Average	21.50	14.825	10.50	85.704	15.00	33.00	35.00	74.625
Dec. 19-31	21.50	14.80-14.85	10.50	94.00	15.00	33.00	35.00	74.625
Jan. 1-6	21.50	14.80-14.85	10.50	94.00	15.00	33.00	35.00	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, fob Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt. Steel	$40.00
No. 2 Heavy Melt. Steel	40.00
No. 1 Busheling	40.00
Nos. 1, 2 and 3 Bundles	40.00
Machine Shop Turnings	35.50-36.00
Mixed Borings, Turnings	35.50-36.00
Short Shovel Turnings	36.50-37.00
Cast Iron Borings	37.00-37.50
Bar Crops and Plate	47.50-48.00
Low Phos. Steel	47.50-48.00
Heavy Turnings	40.50-41.00

Cast Iron Grades

No. 1 Cupola	55.00-55.50
Charging Box Cast	44.50-45.50
Heavy Breakable Cast	42.00-43.00
Unstripped Motor Blocks	50.00-51.00
Malleable	62.50-63.00
Brake Shoes	50.50-51.00
Clean Auto Cast	55.00-55.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.50-41.00
R.R. Malleable	62.50-63.00
Axles	51.50-52.00
Rails, Rerolling	54.50-55.00
Rails, Random Lengths	52.50-53.00
Rails, 3 ft and under	54.00-54.50
Rails, 18 in. and under	55.00-55.50
Railroad Specialties	53.50-54.50
Uncut Tires	52.00-52.50
Angles, Splice Bars	53.00-54.00

CLEVELAND

No. 1 Heavy Melt. Steel	$39.00-39.50*
No. 2 Heavy Melt. Steel	39.00-39.50*
No. 1 Busheling	39.00-39.50*
Nos. 1 & 2 Bundles	39.00-39.50*
Machine Shop Turnings	34.00-34.50
Mixed Borings, Turnings	33.50-35.50
Short Shovel Turnings	35.00-35.50
Cast Iron Borings	35.00-35.50
Bar Crops and Plate	44.00-44.50
Punchings & Plate Scrap	44.00-44.50
Heavy Turnings	39.00-40.00
Alloy Free Turnings	37.00-38.00
Cut Structurals	52.00-54.00

* Plus applicable freight springboard.

Cast Iron Grades

No. 1 Cupola	62.00-65.00
Charging Box Cast	54.00-56.00
Stove Plate	58.00-60.00
Heavy Breakable Cast	53.00-55.00
Unstripped Motor Blocks	56.00-57.00
Malleable	68.00-70.00
Brake Shoes	52.00
Clean Auto Cast	63.00-65.00
No. 1 Wheels	58.00-60.00
Burnt Cast	52.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.00-41.00
R.R. Malleable	68.00-70.00
Rails, Rerolling	56.00
Rails, Random Lengths	54.00-55.00
Rails, 3 ft and under	58.00-60.00
Cast Steel	58.00-60.00
Railroad Specialties	53.00-55.00
Uncut Tires	54.00-55.00
Angles, Splice Bars	58.00-59.00

VALLEY

No. 1 Heavy Melt. Steel	39.50-40.00*
No. 2 Heavy Melt. Steel	39.50-40.00*
No. 1 Bundles	39.50-40.00*
Machine Shop Turnings	34.00-35.00
Short Shovel Turnings	36.00-36.50
Cast Iron Borings	35.50-36.00
Low Phos.	48.00-48.50

* Plus applicable freight springboard.

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.00-41.00*

* Earmarked for return to steel supplier. Price in open market, 48.00-49.00.

MANSFIELD

Machine Shop Turnings	36.50-37.50
Short Shovel Turnings	36.50-37.50

CINCINNATI

No. 1 Heavy Melt. Steel	$39.50
No. 2 Heavy Melt. Steel	39.50
No. 1 Busheling	39.50
No. 1 Bundles	39.50
No. 2 Bundles	39.50
Machine Shop Turnings	33.50
Mixed Borings, Turnings	32.50
Short Shovel Turnings	35.50
Cast Iron Borings	34.50

Cast Iron Grades

No. 1 Cupola Cast	55.00
Charging Box Cast	43.00
Heavy Breakable Cast	48.00
Stove Plate	45.00
Unstripped Motor Blocks	45.00
Brake Shoes	41.00
Clean Auto Cast	55.00
Drop Broken Cast	60.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	42.00
R.R. Malleable	62.00
Rails, Rerolling	55.00
Rails, Random Lengths	52.00
Rails, 18 in. and under	58.00

DETROIT

(Dealers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$34.50-35.00
No. 1 Busheling	34.50-35.00
Nos. 1 & 2 Bundles	34.50-35.00
No. 3 Bundles	34.50-35.00
Machine Shop Turnings	28.50-29.00
Mixed Borings, Turnings	28.50-29.00
Short Shovel Turnings	29.50-30.00
Cast Iron Borings	29.50-30.00
Punchings & Plate Scrap	40.00-41.00

Cast Iron Grades

No. 1 Cupola Cast	60.00-62.00
Heavy Breakable Cast	50.00-52.00
Clean Auto Cast	60.00-62.00

BUFFALO

No. 1 Heavy Melt. Steel	$42.50-44.50
No. 2 Heavy Melt. Steel	41.50-42.00
No. 1 Busheling	41.50-42.00
No. 1 & 2 Bundles	41.50-42.00
Machine Shop Turnings	34.00-34.50
Mixed Borings, Turnings	34.00-34.50
Cast Iron Borings	34.00-34.50
Short Shovel Turnings	36.00-36.50
Low Phos.	47.00-48.00
Elec. Furnace Bundles	44.00-45.00

Cast Iron Grades

No. 1 Cupola	58.00-60.00
Mixed Cupola	54.00-56.00
Heavy Breakable Cast	51.00-52.00
Malleable	64.00-66.00
No. 1 Wheels	52.00-54.00
Clean Auto Cast	58.00-60.00

Railroad Scrap

Rails, 3 ft. and under	50.00-52.00
Railroad Specialties	49.00-51.50

PHILADELPHIA

No. 1 Heavy Melt. Steel	$41.00-42.00*
No. 2 Heavy Melt. Steel	41.00-42.00*
No. 1 Busheling	41.00-42.00*
No. 1, No. 2 Bundles	41.00-42.00*
No. 3 Bundles	39.00-40.00*
Machine Shop Turnings	34.00-34.50
Mixed Borings, Turnings	34.00-34.50
Short Shovel Turnings	35.00-36.00
Bar Crop and Plate	47.50
Punchings & Plate Scrap	47.50
Cut Structurals	47.50
Elec. Furnace Bundles	44.50-45.50
Heavy Turnings	43.00-44.00
No. 1 Chemical Borings	39.00-40.00

Cast Iron Grades

No. 1 Cupola Cast	54.00-55.00
No. 1 Machinery Cast	56.00-58.00
Charging Box Cast	50.00-51.00
Heavy Breakable Cast	53.00-54.00
Unstripped Motor Blocks	47.50-48.50
Malleable	65.00-66.00
Clean Auto Cast	55.00-56.00
No. 1 Wheels	55.00

* Nominal.

NEW YORK

(Dealers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$37.00
No. 2 Heavy Melt. Steel	36.00
No. 1 Busheling	36.00
Nos. 1 & 2 Bundles	36.00
No. 3 Bundles	34.00
Machine Shop Turnings	29.00-30.00
Mixed Borings, Turnings	29.00-30.00
Short Shovel Turnings	31.00-32.00
Punchings & Plate Scrap	40.00
Cut Structurals	40.00
Elec. Furnace Bundles	40.00

Cast Iron Grades

No. 1 Cupola Cast	49.00-50.00
Charging Box Cast	49.00-50.00
Heavy Breakable	49.00-50.00
Unstripped Motor Blocks	46.50-47.50
Malleable	58.00

BOSTON

(Fob shipping point)

No. 1 Heavy Melt. Steel	$31.50-32.50
No. 2 Heavy Melt. Steel	31.50-32.50
No. 1 Bundles	31.50-32.50
No. 1 Busheling	31.50-32.50
Machine Shop Turnings	27.00-28.00
Mixed Borings, Turnings	28.00-29.00
Short Shovel Turnings	28.50-29.50
Bar Crops and Plate	33.00-34.00
Punchings & Plate Scrap	33.00-34.00
Chemical Borings	30.00-31.00

Cast Iron Grades

No. 1 Cupola Cast	46.00-47.00
Charging Box Cast	40.00-41.00
Heavy Breakable Cast	47.00-48.00
Stove Plate	46.00-47.00
Unstripped Motor Blocks	41.00-42.00
Clean Auto Cast	44.00-45.00

CHICAGO

No. 1 Heavy Melt. Steel	$38.50-39.00
No. 2 Heavy Melt. Steel	38.50-39.00
Nos. 1 & 2 Bundles	38.50-39.00
No. 3 Bundles	36.50-37.00
Machine Shop Turnings	33.50-34.00
Mixed Borings, Turnings	33.50-34.00
Short Shovel Turnings	35.50-36.00
Cast Iron Borings	34.50-35.00
Bar Crops and Plate	44.50-45.00
Punchings	49.00-50.00
Elec. Furnace Bundles	39.50-40.00
Heavy Turnings	38.00-38.50
Cut Structurals	43.50-44.00

Cast Iron Grades

No. 1 Cupola Cast	62.00-65.00
Clean Auto Cast	62.00-65.00
No. 1 Wheels	50.00-53.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-47.00
Malleable	72.00-74.00
Rails, Rerolling	59.00-61.00
Rails, Random Lengths	56.00-57.00
Rails, 3 ft and under	61.00-62.00
Rails, 18 in. and under	63.00-64.00
Railroad Specialties	55.00-56.00
Angles, Splice Bars	60.00-61.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$38.00-39.00
No. 2 Heavy Melt. Steel	37.00-38.00
Machine Shop Turnings	31.00-33.00
Short Shovel Turnings	33.00-34.00

Cast Iron Grades (Fob shipping point)

No. 1 Cupola Cast	50.00-54.00
Mixed Cast	50.00-51.00
Heavy Breakable Cast	43.00-45.00
Brake Shoes	46.00-47.00
Clean Auto Cast	55.00-56.00
Burnt Cast	47.00-49.00

Railroad Scrap

R.R. Malleable	62.00-63.50
Rails, Rerolling	58.00-60.00
Rails, Random Lengths	53.00-55.00
Rails, 3 ft and under	56.00-58.00
Uncut Tires	46.00-47.00
Angles, Splice Bars	48.00-49.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	$37.00
No. 2 Heavy Melt. Steel	37.00
No. 1 Busheling	37.00
Nos. 1 & 2 Bundles	37.00
No. 3 Bundles	31.00
Long Turnings	24.50
Short Shovel Turnings	26.00-27.00
Cast Iron Borings	25.00
Bar Crops and Plate	38.50
Cut Structurals	38.50

Cast Iron Grades

No. 1 Cupola Cast	51.00
Stove Plate	43.00
No. 1 Wheels	45.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	38.00
R.R. Malleable	45.00
Axles, Steel	39.00
Rails, Rerolling	52.00
Rails, Random Length	39.00
Rails, 3 ft and under	41.00
Angles and Splice Bars	41.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	*$25.00
No. 2 Heavy Melt. Steel	*25.00
No. 1 Busheling	*25.00
Nos. 1 & 2 Bundles	*25.00
No. 3 Bundles	*20.00
Machine Shop Turnings	*15.50
Bar Crops and Plate	25.00
Cast Steel	25.00
Alloy Free Turnings	15.50
Cut Structurals	25.00
Tin Can Bundles	20.00

Railroad Scrap

No. 1 Heavy Melting	26.00
Axles	32.00
Rails, Random Lengths	26.50
Uncut Tires	33.50

*Fob California shipping point.

SEATTLE

No. 1 Heavy Melt. Steel	$24.00
No. 2 Heavy Melt. Steel	24.00
No. 1 Busheling	24.00
Nos. 1 & 2 Bundles	22.00
No. 3 Bundles	22.00
Machine Shop Turnings	14.50
Mixed Borings, Turnings	14.50
Punchings & Plate Scrap	24.50
Cut Structurals	24.50

Cast Iron Grades

No. 1 Cupola Cast	30.00
Charging Box Cast	25.00
Heavy Breakable Cast	24.00
Stove Plate	25.50
Unstripped Motor Blocks	24.00
Malleable	30.00
Brake Shoes	30.00
Clean Auto Cast	30.00
No. 1 Wheels	26.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Railroad Malleable	30.00
Rails, Random Lengths	21.50
Angles and Splice Bars	23.00

LOS ANGELES

No. 1 Heavy Melt. Steel	$25.00
No. 2 Heavy Melt. Steel	25.00
Nos. 1 & 2 Bundles	25.00
Machine Shop Turnings	16.00
Mixed Borings, Turnings	15.50-16.00
Punchings & Plate Scrap	28.00
Elec. Furnace Bundles	28.00

Cast Iron Grades

No. 1 Cupola Cast	35.00-36.00

HAMILTON, ONT.

(Ceiling prices, delivered)

Heavy Melting	$22.00
No. 1 Bundles	22.00
Mechanical Bundles	20.00
Mixed Steel Scrap	19.00
Mixed Borings, Turnings	17.00
Rails, Remelting	23.00
Rails, Rerolling	26.00
Bushelings	17.00
Bushelings, new factory, prep'd	21.00
Bushelings, new factory, unprep'd	16.00
Short Steel Turnings	17.00

Cast Iron Grades*

No. 1 Cast	37.50-38.00

* Removed from price control Aug. 9, 1947; quoted on basis of fob shipping point.

For Speedier Assembly, Smarter Appearance...

Postage Meter and Mailing Equipment Makers Put the Stamp of Approval on AMERICAN PHILLIPS SCREWS

IN PRODUCTION: It's *first class* assembly for mailing and metering equipment manufacturers when power driven, American Phillips Screws provide fumble-proof starts, *automatically straight* driving and unspoiled work. These screws deliver—with "air mail speed" and "registered letter safety"! What's more, they *can't* snag envelopes but *do assure* permanent tightness of fastening. Best of all, TIME SAVINGS RUN AS HIGH AS 50%!

IN SALES PROMOTION: The jobber, the dealer and John Q. Public *all* like the streamlined, modern look that dresses up products as varied as autos and radios, stoves and sofas, boats and bicycles — and American Phillips Screws help provide it! Write *special delivery* today for fastening facts that can cut *your* costs.

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND

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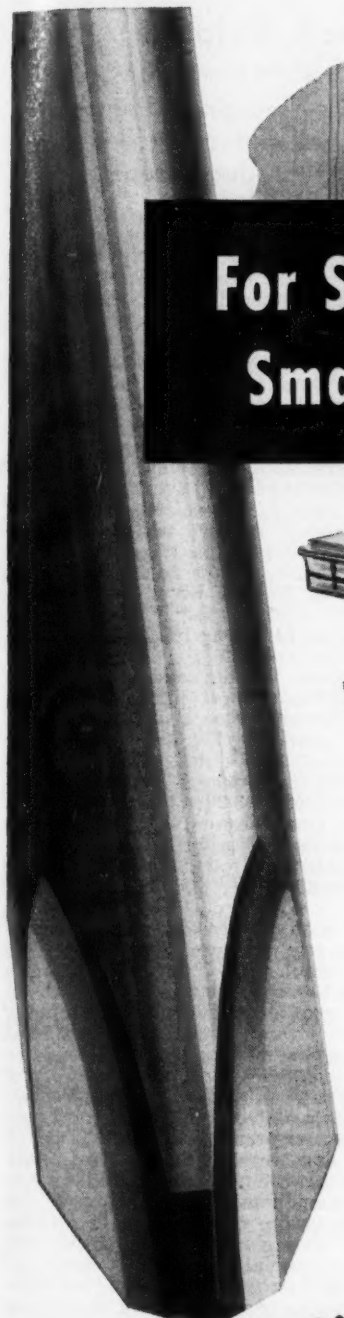
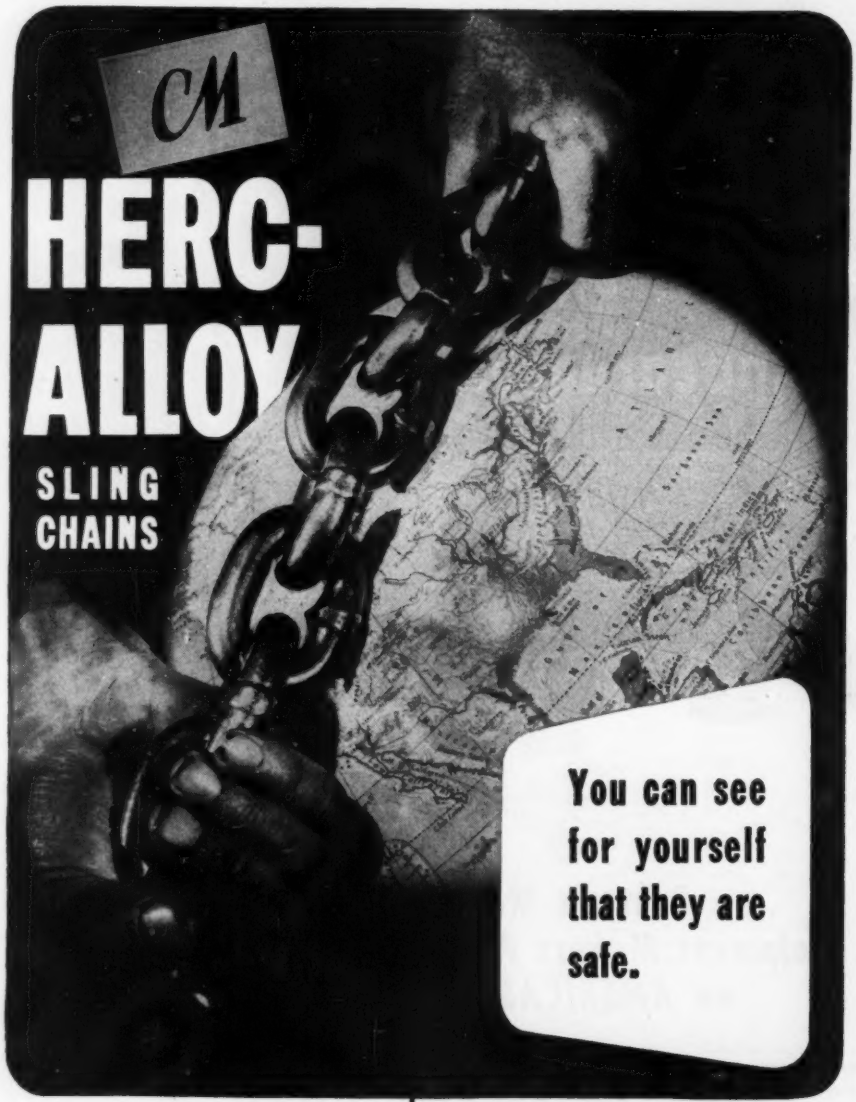


4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS

AMERICAN PHILLIPS *Screws*

ALL TYPES

ALL METALS: Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)



● Just one of the big advantages of HERC-ALLOY Sling Chains is that you can determine their serviceability by a simple visual inspection.* Ordinary steel or iron chains, on the contrary, grow dangerously brittle with age... an insidious threat to the safety of men and materials. That's why more and more of the important companies are standardizing on HERC-ALLOY Sling Chains... because you can *see* for yourself that they're safe.

*Write for your copy of this new, informative booklet. No charge.

HERC-ALLOY FEATURES

- America's *first* alloy steel sling chain... first to bear a serial number.
- *Every* CM HERC-ALLOY Sling Chain is alloy steel throughout... links, rings, hooks. There is only one grade... *the best.*
- Every chain is individually tested and accompanied by a certificate of registration.
- Links are side welded for maximum strength by patented INSWELL electric method.
- HERC-ALLOY Chains should *never* be annealed.
- HERC-ALLOY Chains are lighter... stronger... easier to handle... outlast ordinary chains 4 to 5 times... cost less on the job.

HERC-ALLOY... the chain you can *SEE* is safe

COLUMBUS-McKINNON
CHAIN CORPORATION
(Affiliated with Chisholm-Moore Hoist Corporation)
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
SALES OFFICES: New York • Chicago • Cleveland • San Francisco • Los Angeles

Sheets, Strip...

Sheet Prices, Page 116

Price margins disappearing on all but cold-rolled items, some producers report

Pittsburgh — Advance of from $5 to $10 per ton in sheet prices recently put into effect by two relatively small, captive steel producers is not considered indicative of possible similar action by major interests. However, some sheet and strip producers contend rising production costs have eliminated profit margins in nearly all items except cold-rolled. There is little likelihood, however, this situation will be remedied soon.

International Detrola Corp.'s Newport Rolling Mill Division, Newport, Ky., raised galvanized, corrugated galvanized, culvert and long terne sheets $10 per ton effective Jan. 1. Similarly, a $10 per ton increase was made by Empire Steel Corp., Mansfield, O., effective Jan. 5, on hot-rolled sheets to $4.75 per 100 lb for 19 gage base and to $5.10 for long ternes, 10 gage base. Empire also has increased its electrical sheet prices $5 per ton to following price levels per 100 lb: Field grade, $4.75; armature, $5.05; electrical, $5.55; motor, $6.30; dynamo, $7; transformer 72, $7.50; transformer 65, $8.20; transformer 58, $8.90; transformer 52, $9.70. Empire also increased its special "Black Beauty" coated hot-rolled sheet item $5 per ton to $5.65 per 100 lb for 16 gage base.

As soon as present order commitments expire, Empire is expected to discontinue production of long ternes and other specialty products with exception of electrical sheets, except for its new owner, Studebaker Corp., and its suppliers.

Sharon Steel Corp. has issued a new extra card on carbon hot-rolled sheets and strip, dated Jan. 1. The new card supersedes previous list dated Dec. 10, 1946, and largely brings it up to date. However, the new card includes a special soundness quality extra of 25c and a listing of specific test requirement extras which supplement the former special requirement extra and has broken it down into its components to conform to the description of the various products as presented in Steel Products Manual, section 12.

Philadelphia — Delivered sheet prices now stand at 4.006 cents on cold-rolled, reflecting the freight rate from Pittsburgh, the governing base, of 45.6c and 3.04c on hot-rolled and 4.19c on galvanized, reflecting a rate of 24 cents per 100 lb from Sparrows Point, Md., the governing base here on those grades. As this means greater absorption by the midwestern producers on eastern shipments, this should eventually add to the difficulties of local consumers in obtaining tonnage, but not for a while because quotas for the first quarter have already been set up.

Birmingham—Except for what is described as superficial relaxation probably due to the holiday period, demand for sheets continued far in excess of available supplies. But the greatest worry to jobbers and users is that there is no real indication of any considerable change for the better in the early offing. Some new sheet capacity will materialize pos-

One of a series *of messages to help you increase your understanding of business paper advertising, and its effect on your business.*

What happens when the "push-overs" start pushing back?

ASK ANY GOOD SALESMAN, and he'll tell you that the lush days are just about gone—along with shortages, slow production and the sellers' market.

Today, customers are playing hard to get. The "push-overs" are beginning to push back. Production isn't lagging any more—it's already nearly double the pre-war level, and fast catching up with demand. There's plenty of healthy competition in sight. And you can be glad there is.

American business has always thrived on competition. It still can. But the machinery of selling and distribution will have to work at peak efficiency.

And that means — *more mechanization!*

Mechanization is simply the application of assembly-line methods to the *manufacture of a sale.* It's the only way to balance mass production.

With mechanized selling, you won't turn prospects into "push-overs," but you'll certainly get them leaning your way. By exploring the field, arousing interest, creating a preference for the things your company makes, mechanized selling multiplies the productive capacity of your sales force by the hundreds, or thousands, or by any number your market requires.

But this machine is no stranger to *you.* You know it by its first name—ADVERTISING.

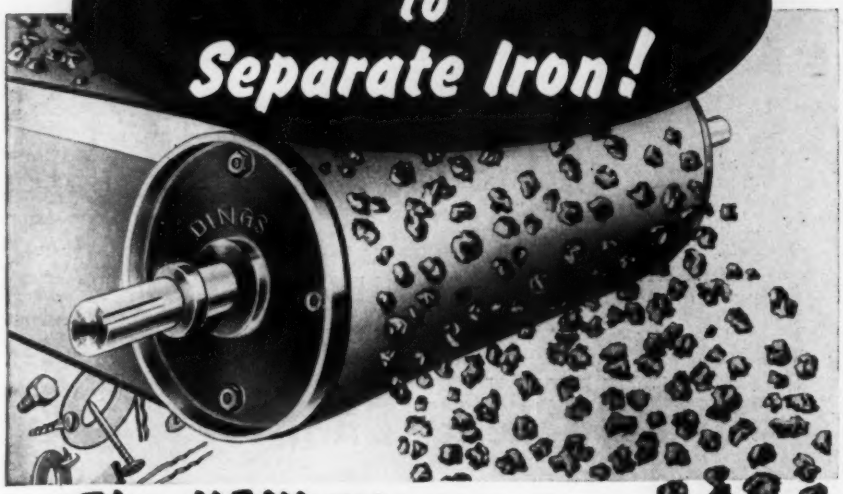
We'd just like to point out that now is the time to put the machine to work, more consistently, more aggressively than ever. And remember that when your advertising goes to work in the right business papers, with their tremendous concentration of hand-picked readers, it becomes *the most efficient machine* you can use for manufacturing sales at a profit.

Just how efficiently does business paper advertising work? If you'd like to see some examples, we'll be glad to send you a recent ABP folder on actual results. Also, if you'd like reprints of this advertisement (or the entire series) to show to others in your organization, you may have them for the asking.

STEEL

is one of the 129 members of The Associated Business Papers, whose chief purpose is to maintain the highest standards of editorial helpfulness—for the benefit of reader and advertiser alike.

THE MODERN WAY to Separate Iron!



The NEW Dings
ALNICO MAGNET
PERMA·PULLEYS*

For: Separation of Ferrous and Non-Ferrous Scrap
Removal of Iron from Foundry Sand

• No wiring . . . no electrical accessories . . . no operating cost . . . no maintenance . . . good for life . . . tremendous power . . . completely automatic

The new Dings PERMA-PULLEY is a revolutionary contribution to magnetic separation. You can install it and forget it!

Backed by 50 years of magnetic separator manufacturing experience, this new pulley offers these plus features that assure you of maximum tramp iron removal:

- Extra high strength grade of Alnico
- Closely spaced poles
- Magnetic strength equal across entire belt width
- Crowned face to prevent belt weave
- Extremely high surface strength

Dings PERMA-PULLEYS are available in 53 sizes with shaft diameters to suit your requirements. *ALSO complete pulley type separators with PERMA-PULLEY, idler pulley, belt and drive in any size required.* SEND for new BULLETIN 260-A.

DINGS MAGNETIC SEPARATOR CO.
4710 W. McGeogh Ave., Milwaukee 14, Wis.

*MOST POWERFUL NON-ELECTRIC PULLEY ON THE MARKET!

Dings offers you the most powerful magnetic pulleys for the job:

1. For burden depths up to two inches — The Dings *Perma-Pulley* with its extremely high surface strength.

2. For burden depths over two inches — The Dings "High-Intensity" Electromagnetic Pulley with its great depth of magnetic penetration.

Dings
"HIGH INTENSITY"

MAGNETIC PERMANENCE GUARANTEED for life!

sibly late this year, but even that will not take care of anticipated needs, and talk is heard of further reduction in quotas. The situation in strip is considerably better.

Boston—An advance in low carbon cold-rolled strip to 4.45c, Worcester, by one district producer, an increase of $7 a ton, is expected to be followed to some extent by others. The supply situation in flat-rolled products is deteriorating rather than improving, shortages hampering production in more lines. Outlook for an increase in second quarter narrow cold strip allocations is fading; carryovers will limit new tonnage and most producers are not making inroads on backlogs as expected. Lack of balance in hot strip is a factor frequently upsetting mill schedules.

Chicago — Manufacturers in general have started the new year with unbalanced inventories of steel with the major shortage consisting of flat-rolled products. Some claim to have 40 to 50 per cent of their work scheduled tied up.

New York — Delivered prices on sheets are higher on hot-rolled and galvanized sheet reflecting the recent increase in interstate rates from Sparrows Point, Md., the governing base, to this city. Hot-rolled sheets are now 3.172c delivered and galvanized 4.322c. No change, because of freight rates, will be made on cold-rolled sheets until Feb. 1 at which time the advance will go into effect on intrastate rates from Buffalo to New York. The new rates will be 49.2c per 100 lb, resulting in a delivered price of 4.042c per lb, assuming no charge in the base price meanwhile.

Tubular Goods . . .

Tubular Goods Prices, Page 117

Cleveland—With the shortage of standard pipe and welded tubing spurring some consumers to attempt to obtain seamless mechanical or seamless pressure tubing as substitutes, one producer reports it still finds it advisable to decline furnishing such substitutes in order to conserve supplies for regular consumers of the seamless items. This producer's seamless mechanical tubing capacity is booked half way through the second quarter of 1948, while seamless pressure tubing capacity is booked through both of the first two quarters. For oil country goods, the company is booked through 1949.

St. Louis—Pipe production in this district is inching upward and shipments this month will exceed December's if rail car shortages do not worsen. Mills predict moderately better tonnage for 1948—assuming no greater manpower or materials troubles—even though they have been running right at capacity the last 12 months. Pipe demand is unabating. Placing of legitimate orders is being complicated, however, by new customers seeking pipe to trade for other steel items they need. Mills currently are setting up customer allocations for the second quarter, which will run about the same as last year. Pipemakers are concentrating on standard sizes and specifications which has the effect of hurting special users whose requests are largely being rejected.

Steel Bars . . .

Bar Prices, Page 116

Cleveland — Recent strengthening in alloy bar demand has filled the near-term rolling schedules for this product, one producer reports.

New York—Hot carbon bar consumers are still pressing for tonnage, being unable in most cases to get sufficient steel to meet their requirements, and in the small specifications this is particularly true. Buyers stand to get little or no more tonnage in the current quarter than they received during the period just ended. Actually they may get less, depending upon winter weather conditions which sometimes adversely affect mill operations. Most producers entered the new quarter with about the same volume of arrearages as three months ago, although some are hoping to get caught up by the end of this month, and have restricted the acceptance of new specifications accordingly for the remainder of the quarter. Proposed voluntary allocation program, which the government has been urging, may make for some further revisions in consumer quotas; however, the general pattern of distribution should not be much affected, for the time being anyway.

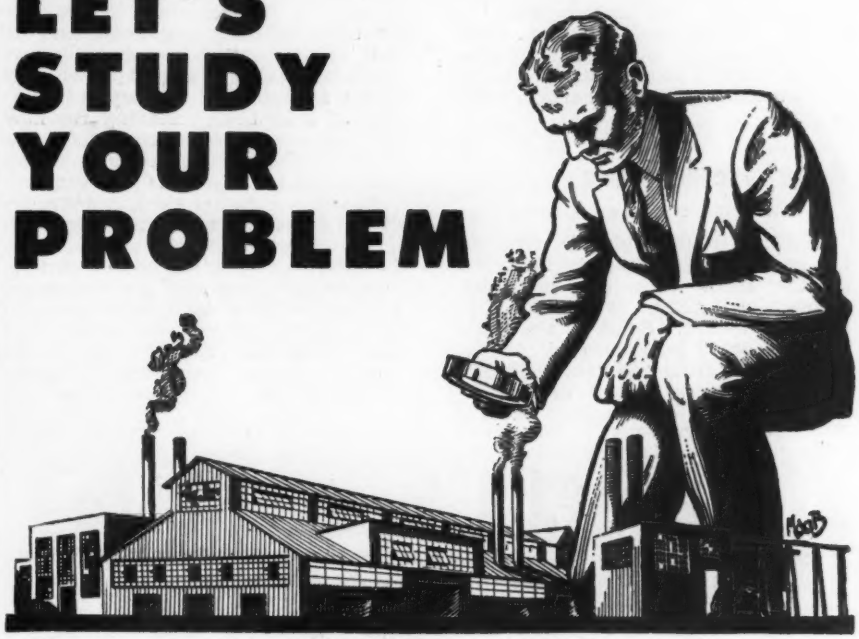
Pittsburgh—Rail freight rate advances, put into effect since Jan. 1, 1947, have steadily increased freight absorption on shipments of carbon and alloy hot and cold finished bars into Detroit and eastern Michigan. This situation has forced some sellers to withdraw partially from this market. There is also reported considerable pressure to increase the price spread to more than $3 and $4, respectively, for Detroit and eastern Michigan. Some consideration is still being given toward revising carbon steel bar size extras, although no such action is indicated at this time.

Philadelphia — Hot carbon bar demand continues strong, with no appreciable easing in supply. In fact, the market actually appears tighter than a few weeks ago. This also applies to cold-drawn carbon bars, although the situation in this material can in no way be regarded as stringent. Alloy bars can still be had in five to six weeks. Delivered price of hot carbon bars is now 3.356 cents, reflecting the increase in freight rate from Pittsburgh.

Boston—Consumption of alloy steel bars is several points above the prewar level, but the increase in productive capacity more than balances demand; alloys therefore are in balance with demand with cold finished carbon on an approximate level except for a few small sizes and grades. Improvement in the supply of hot-rolled carbon stock is uneven and there are users of those grades short of certain sizes, including forge shops, bolt and nut makers and consumers of quality stock. Builders of textile mill and other miscellaneous equipment are generally covered sufficiently on bar requirements, although there is some tightening in cold finished.

New York — Delivered prices on hot-rolled carbon bars will not reflect the recent increase in freight rates until Feb. 1, at which time the advance becomes effective on New York intrastate rates from Buffalo to this city. Assuming no change in the

LET'S STUDY YOUR PROBLEM



Is it a New Plant?

Is it Modernization?

Is it Increased Capacity?

Is it Materials Handling?

Is it Processing?

Is it Power?

SHREVE, ANDERSON AND WALKER
Engineers and Architects
DETROIT 26, MICHIGAN

base, the delivered price will then be 3.392c, against the current figure of 3.351c. Meanwhile, pressure continues strong for practically all sizes of hot carbon bars, with producers well booked up for the current quarter.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 116

Chicago—New inquiry for reinforcing steel is comparatively light, but at the same time a considerable amount of tonnage is hanging fire, awaiting award. Some of the latter tonnage dates back several months, and springs from the fact that general contractors find it difficult to arrange for their steel requirements because of steel shortage. Much construction is being contemplated for this coming spring and summer but plans are being matured slowly for better appraisal of the supply situation at that time. Bidding for new projects is listless and thin, but there is a good volume of work in which only small tonnages are involved.

Boston—Although not heavy, demand for concrete reinforcing bars is in excess of supply and contractors have difficulty in placing orders. Frequently contracts are estimated without definite bar cost or promise of a supply source. Distributors of reinforcing steel are held to limited quotas and are reluctant to quote on considerable tonnage. For two piers, Mystic river bridge, 200 tons have been placed but buyers are forced to shop around extensively for most tonnages. While contract bars are no longer the weaker link in the price structure, the limited supply is still largely due to lack of semi-finished. Bids close Jan. 26 with the Port of Boston Authority on the substructure, Hoosac pier No. 1, Charlestown.

Plates . . .

Plate Prices, Page 117

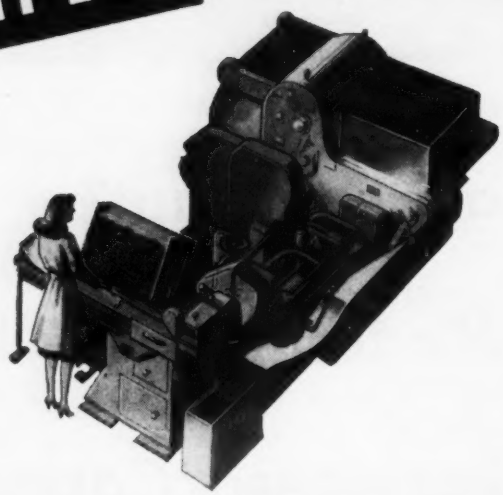
New York—Continued active demand for plates marks the turn of the new year. Inquiry is coming from a diversity of sources, in substantially greater volume than the mills can handle. In fact, producers generally are out of the market on plain carbon plates, being covered for the first quarter and booking nothing beyond. On floor plates and certain specialties tonnage for shipment in the current quarter is still available. Semi-integrated mills, in particular, continue to be handicapped by scarcity of scrap and pig iron, with little immediate relief in sight. New York delivered prices on plates are higher at 3.322c, reflecting the increase in freight rates from Sparrows Point, Md., Jan. 5.

Birmingham—January will not be the prolific month hoped for in some quarters as far as plates are concerned. Users without exception say they are short of requirements even on below capacity production schedules. A somewhat freer flow of plates to the carbuilding industry is evident, although considerable tonnage continues to move from outside the district. Indications are that considerable rolling capacity will be devoted to 1947 carryovers in plates.

Boston—Freight car building shops are expected to take a larger slice of plate production next quarter and with allocation of carbon plates reduced for the current period to account for carryovers no nearby increase in tonnage is in sight. Low alloy high-tensile grades are also sold out for this quarter in most cases with tonnage backed up for second quarter schedules. Few producers are in a position to add to carbon plate volume; some are taking a minimum of this type of tonnage while others are heavily booked. Sales activity is limited mostly to clad material, specialties, floor plates and extra-taking grades.

Philadelphia — Stringency in plates is more pronounced as a result of a program of major repairs at the 160-in. sheared plate mill at Sparrows Point, and difficulties of various producers in obtaining adequate supplies of pig iron, scrap and oil. One district mill, due largely to this last factor, is taking off one shaft at its blooming mill for the final three weeks of this month, going to a two-shift schedule. As a result of recent increase in freight rates, the minimum delivered price on plates here is 3.19 cents. This is predicated on a 2.95 cent base at Sparrows Point, plus a rate of 24 cents per 100 lb. Increased cost of pig iron and scrap plus higher rates on all incoming freight may result in higher steel prices in the near future at some semi-integrated mills.

TRIPLED Brush Life



in cigarette making machine

One feature of this machine is the efficiency of a rotary brush continuously sweeping a canvas belt that feeds shredded tobacco to the paper. Formerly, this brush had a short life span necessitating frequent replacement. The manufacturer of this machine, The American Machine and Foundry Co., consulted Fuller Brush Engineers . . . who recommended attaching Fullergript brush strips longitudinally to a rotating shaft. The canvas belt is now swept thoroughly . . . yet brush life is tripled. Similar improvements can be brought to your own production. Simply write. . .

FULLERGRIPT
INDUSTRIAL DIVISION
THE FULLER BRUSH CO.
3582 MAIN ST. • HARTFORD 2, CONN.

Structural Shapes . . .

Structural Shape Prices, Page 117

Chicago—Considering the amount of private and public construction being contemplated, new inquiry for fabricated structural steel is amazingly low. Since mid-December, few requests for bids have come out in this area, and total tonnage involved is light. Normally, those proposing new construction are getting squared around so as to get under way early in the spring. The lull, of course, comes about not from lack of interest in building, but the fact that plain shapes are in short supply and fabricators are booked beyond midyear.

Boston—Increase in structural inquiry is due largely to a flurry in public works, notably bridges, although contracts include 1040 tons for private construction in the Providence, R. I., area. Want of balance in sizes hampers most fabricating shops in rounding out tonnages within allocations and warehouses are taking in less than requirements. For furnishing structurals for bridge material only, contracts recently awarded by Maine ranged from 6.45c to 7.70c per pound for the larger representative tonnages. For fabricating and erecting steel, 15.47c was bid by American Bridge Co., Boston, on the West Branch span, 251 tons. Bethlehem Steel Co. quoted 7.70c, furnishing only, Wiscasset-Edgecomb bridge, and Bancroft & Martin Rolling Mills Co., South Portland, Me., 6.45c, Salmon Falls bridge. Maine closes Jan. 14 on two additional small bridges, furnishing material only, and also 39,748 sq ft steel grid flooring. Bids on 450 tons, state bridges, Waterbury, Conn., have been postponed to Jan. 14 from Jan. 6.

Philadelphia — Structural demand is a shade livelier in this district with prospects of further gains as the spring season approaches. Fabricators report a stepping up in inquiry not only locally but from other districts as well, especially in the south. Shapes, delivered Philadelphia, are higher at 2.968c as a result of the increase in freight rate from Bethlehem, Pa., the governing base.

New York—While public work appears to be holding its own, private structural demand continues to increase, with much work pending and fairly sizable jobs being placed.

As a result of the recent freight rate increase, the delivered price on shapes has been advanced to 3.088c, New York.

Rails, Cars . . .

Track Material Prices, Page 117

Philadelphia — Bethlehem Steel Co. has advanced axles to $4.50 per 100 lb base, an increase of $8 a ton and has also made various changes in wheels, including an increase of $2.50 a wheel on the AAR class A 33 and B 33, and an increase of approximately 15 per cent on all untreated 33-in. diameter standard AAR design car, tender and engine truck wheels.

New York — While freight car buying since the beginning of the year has been light, considerable business is active and includes among the more recent inquiries 1000 50-ton hopper cars for the Clinchfield and 1000 to 2000 50-ton box cars and 500 70-ton hopper cars for the Chicago, Rock Island & Pacific.

Freight car production reached a peak for 1947 of 9803 cars during the final month of the year, according to the American Railway Car Institute. Commercial car builders delivered 7661 cars and railroad shops 2142 cars. During the year 68,478 new cars were added to the equipment of domestic railroads while at the same time car builders completed construction of 27,646 for export. Export shipments, which were abnormal due to a 1946 order for 36,000 cars for the rehabilitation of France, are expected to be small during the present year unless stepped up under the Marshall Plan.

Wire . . .

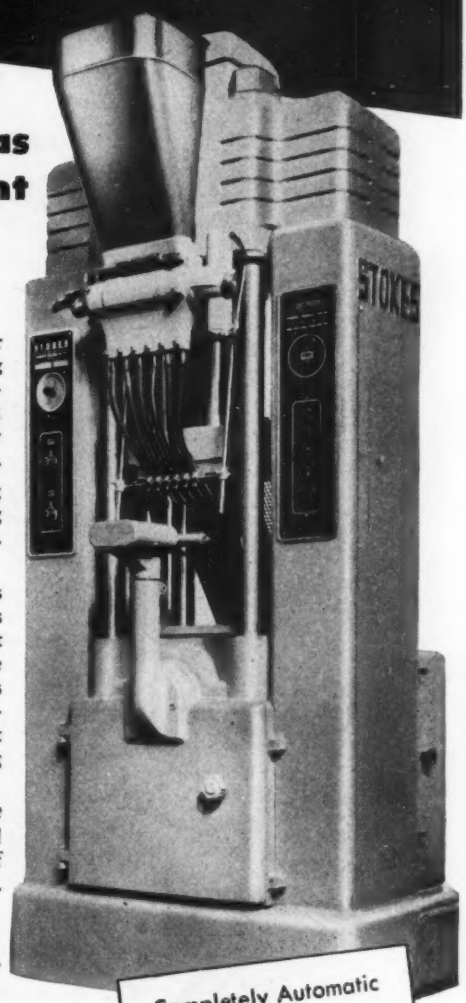
Wire Prices, Page 117

Chicago—Despite the fact winter weather is retarding farm construction and rehabilitation work, demand for merchant wire items is very strong. Products being sought strenuously by jobbers and users include barbed wire, woven wire fence and nails. There is also substantial demand for steel posts and poultry netting, but not of like proportions.

Birmingham—The hue and cry for wire continues. As one source of demand slackens off another takes up the cry. Result is a shortage that grows little if any easier. Wire processors are considerably off base in

To be sure of correct oil temperature

Insist on ROSS "BCF" COOLERS as factory equipment on ANY MAKE hydraulic press



● In drawing up specifications for your next hydraulic metal drawing press, plastic injection molding machine or die-casting machine, check thoroughly into the type of oil cooler to be furnished as original equipment.

Bear in mind that excessive heating of oil is a trouble-maker for moving parts machined to close tolerances... like the controls, for instance.

If your press builder furnishes Ross "BCF" Coolers, (as most press builders do) you know you will have the most ruggedly built, compact cooler made for hydraulic presses...one that is designed to handle higher than normal pressures...one that is without equal in heat transfer and operating efficiency.

In case a Ross "BCF" Cooler is *not* planned for your press, it will be well worth your while to have a copy of *Bulletin 4922.* Convince yourself. Then, *insist* upon Ross.

ROSS HEATER & MFG. CO., INC.
Division of American Radiator & Standard Sanitary Corporation
1431 WEST AVE., BUFFALO 13, N. Y.
Ross equipment is manufactured and sold in Canada by Horton Steel Works, Ltd., Fort Erie, Ontario

Completely Automatic
STOKES
Plastic Molding Press
Ross Equipped

ROSS "BCF" COOLERS

supplies, and farm wire is scarce in all specifications, nails and fencing predominating.

Boston—While wire users tend to be more inventory minded, allocations for this quarter will be taken in full and pressure for second quarter is developing. Capacity for April is filling; only spot openings are available before that month. In some cases where consumers use a multiplicity of steel products, wire inventories have reached a level in ratio to others sufficient to ease pressure slightly; this accounts for the temporary lag in automotive shipments and to some degree to other consumers using flat-rolled in connection with wire. For many products, both low and high carbon, demand is well in excess of production; grades for screws and upholstery springs are included. Capacity for processing high carbon specialties is taken up into second quarter generally. Rod volume is slightly improved, but most producers having increased cold finishing capacity are drawing a larger ratio of their rod production than formerly.

Tin Plate . . .

Tin Plate Prices, Page 117

Pittsburgh—The 10 per cent interim rail freight advance until June 30 places tin plate producers in the Pittsburgh, Wheeling, and Weirton districts at a further freight disadvantage. Freight absorption on shipments from Pittsburgh into the Chicago area (one of the major tin plate consuming districts) is now $9.36 per ton, in contrast with $7.80 before the initial freight rate advance Jan. 1, 1947. It is reported some producers have at least partially withdrawn from shipping into Chicago. With prospect of an increase in vessel freight rates which now are 62.4 cents from East to West coasts, plus the recent advance in rail rate to Baltimore from Pittsburgh to 43.2 cents, bulk of tin plate from this area to West Coast probably will move via rail. The all-rail rate to West Coast is 98 cents if the reported 11 cents maximum increase is upheld. Jan. 15 is the deadline for getting on mills' books for March export tonnage, most of which already is in. Overall output of tin mill products is expected to record little improvement until second half this year at earliest.

Cleveland — New extra lists covering tin mill products and holloware enameling black plate, effective Jan. 1, have been issued by Carnegie-Illinois Steel Corp., a U. S. Steel Corp. subsidiary. (See STEEL, Dec. 15, p. 158).

In the list of extras and deductions on tin plate, manufacturing ternes and can making quality black plate, there are relatively few changes. Extras for Special or A charcoal tin plate have been increased 15c per base box, while those for 2A charcoal tin plate have been advanced 20c. For coke tin plate, best, the extra has been increased 5c; and for kanners special, 5c. The extra for items packed less than the customary number of sheets per package has been increased from 10c to 30c. The list also includes the recommendation that all charcoal tin plate of 2A grade and better be tissue paper packed at an extra of 50c per package of 56 sheets, or $1 per package of 112 sheets. The tissue packing extra previously was only 15c.

The separate list covering holloware enameling black plate, 29 to 31 gage inclusive, replaces the list of extras covering black plate 29 gage and lighter of Jan. 1, 1947.

Tin Plate Manufacturers To Get Scarce Palm Oil

Licenses for importation of palm oil, in particular demand by the manufacturers of tin plate, will be granted by the Department of Agriculture.

The maximum amount of each license for importation is 2500 metric tons from the Belgian Congo and 500 metric tons from the Netherlands East Indies, chief sources for the product. The palm oil can be imported into the United States by commercial importers with the provision that it shall be used only in the manufacture of tin plate or for such other purpose as approved by the department.

Applications for import licenses should be filed with the Administrator of War Food Order 63, Fats and Oils Branch, Department of Agriculture, Washington 25.

RESEARCH TEST ON THE HOT WORKABILITY OF STEEL....
Testing 3,000°
SILVER STEEL
Experimental Work in ENAMELING
FURNACES
FOR RESEARCH
● For over thirty years HEVI DUTY Electric Laboratory Furnaces have played an active part in industrial scientific research. They are standard in most laboratories. See your laboratory supply dealer or send for descriptive bulletins.
HEVI DUTY ELECTRIC COMPANY
HEAT TREATING FURNACES HEVI DUTY ELECTRIC EXCLUSIVELY
MILWAUKEE 1, WISCONSIN

Blast Furnace Capacity and Production—Net Tons November - 1947

	Number of companies	Annual blast furnace capacity	Production							
			Pig Iron		Ferro manganese and spiegel		Total		Percent of capacity	
			Current month	Year to date	Current Month	Year to date	Current month	Year to date	Current month	Year to date
Distribution by Districts:										
Eastern	11	12,551,280	905,152	9,938,714	28,200	298,065	933,352	10,236,779	90.4	89.1
Pittsburgh-Youngstown	17	25,042,040	1,964,751	20,987,027	25,503	188,512	1,990,254	21,175,539	96.6	92.4
Cleveland-Detroit	6	6,557,500	489,903	5,351,652	-	-	489,903	5,351,652	90.8	89.2
Chicago	7	14,097,710	1,038,551	11,498,043	10,436	12,809	1,048,987	11,510,852	90.4	89.2
Southern	8	4,924,670	353,073	3,596,755	14,752	111,818	367,825	3,708,573	90.8	82.3
Western	4	2,536,000	184,861	x 2,035,830	-	11,297	184,861	x 2,047,127	88.6	88.2
Total	37	65,709,200	4,936,291	x53,408,021	78,891	622,501	5,015,182	x54,030,522	92.8	89.8

Pig Iron . . .

Pig Iron Prices, Page 118

Pig iron prices raised $3-$4 a ton. Freight rate rise adds to delivered prices. Supply short

New York — Strong undertone in pig iron here has been further emphasized by a $3 a ton increase at Bethlehem, Pa., a $4 increase by one leading interest in Buffalo and the recent advances in freight rates. Based on the new rate from Bethlehem, the minimum delivered price at Newark, N. J., on basic iron is $42.208, No. foundry $42.708, malleable $43.208 and bessemer $43.708. The delivered price at Brooklyn on No. 2 foundry is now $44.10 and on malleable $44.60.

Movement of iron into the district has been hampered somewhat by bad weather, although production at furnaces supplying the district is averaging up fairly well. But as has been the case for months local foundries could consume much more iron than they are receiving. A stronger tone in scrap is adding to the pressure for iron.

Cleveland—One of American Steel & Wire Co.'s blast furnaces here supplying the merchant iron trade is now back in blast after being down several weeks for repairs.

Birmingham—Pig iron production continues to run a losing race with demand. The truth is that the picture apparently grows progressively more dismal, if measured in terms of supply and demand. With one furnace or more due to come off for repairs in the immediate future the situation cannot but be further aggravated. Basically, however, the trouble is that the district does not have sufficient pig iron capacity to meet demands of industrial production, much of it war inspired but struggling along under adverse circumstances. Woodward Iron Co. and Republic Steel Corp. have joined Sloss-Sheffield in a $3 a ton boost in the price of iron, effective Jan. 5.

Buffalo—Sweeping advances of $4 a ton on all grades of pig iron were posted by the leading merchant iron producer (Hanna) in this area, effective Jan. 5. Basic and No. 2 foundry iron were raised to $40 a ton. Prices on silvery iron at Niagara Falls were lifted $5 a ton to $78.75 fob furnace for 14.01-14.50 per cent silicon. Differentials in all cases were unchanged. The increase was attributed to higher production costs

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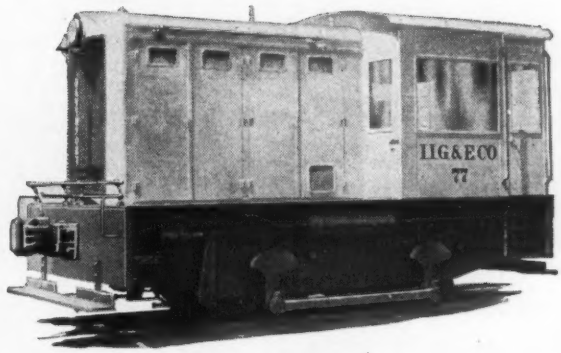

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and the recent advance of 10 per cent in freight rates. Producers are hit by the rate boost on raw materials while foundries pay the boost on iron moving from producers. While the Tonawanda furnace, which is nearing a shutdown period for relining, is still producing, all of its output is going to the parent company. Melters who have been receiving iron from this source have been forced to find other suppliers.

Cincinnati—Pig iron melters in this district are apparently facing a further squeeze. Allotments for this month are smaller, announcements carrying word of furnace relining programs. Foundry schedules are being seriously affected. So far, weather conditions have not caused major delays in deliveries from furnaces. Base prices on both Northern and Southern iron, for delivery in this district, are up $2.

Youngstown—Pig iron price boosts, ranging from $2 to $3 a ton, were announced last week by Youngstown Sheet & Tube Co. and Kaiser-Frazer Parts Corp. The advances reflect rises in costs of coke, iron ore, as well as other operating costs of blast furnaces.

Sheet & Tube advanced prices of all grades $2 a ton effective Dec. 29, and then added another $1 to malleable iron sold here, effective Jan. 5. This makes the price $38 a ton on basic pig iron and $39.50 a ton on malleable iron.

Kaiser-Frazer made its $3 price increase effective Jan. 1, bringing the price to $39.50 a ton on basic. It does not make malleable or bessemer grades.

Boston—Serious as pig iron supply is with most foundries, the situation is even worse at steel plants; production is being lost and costs are mounting. Melters of basic feel the full brunt of higher prices at Buffalo and increased freight rates. Freight from Buffalo to Boston is now $7.776 and New York state shipments are all-rail with water routes closed; bad weather is hampering rail transportation and a strike by 6000 truck drivers around Boston adds to difficulties. Mystic output is reduced by ore troubles as indicated recently and prospects for heavier tonnage from Buffalo and other outside points are dim. Costs are giving increased concern. When the Mystic price for foundry iron was established at $45, Everett, in the mutual co-operative plan, some hesitated over the cost; since then prices have advanced at other points to levels making the delivered price substantially over Everett.

Pittsburgh — Integrated steel interests have not yet followed action of independent merchant producers in raising pig iron prices $2 to $4 a ton. The new base prices for merchant iron at Neville Island and Sharpsville, Pa., are as follows: Basic, $39 per gross ton; $39.50 for No. 2 foundry and malleable iron; and $40 for bessemer. Reflecting recent 10 per cent interim rail freight rate increase, the new pig iron rates from Neville Island to North and South Side Pittsburgh is 99.6 cents; $1.212 to Homestead, McKeesport, Lawrenceville and Monaca; $1.788 to Oakmont and Brackenridge; and $1.596 to Verona.

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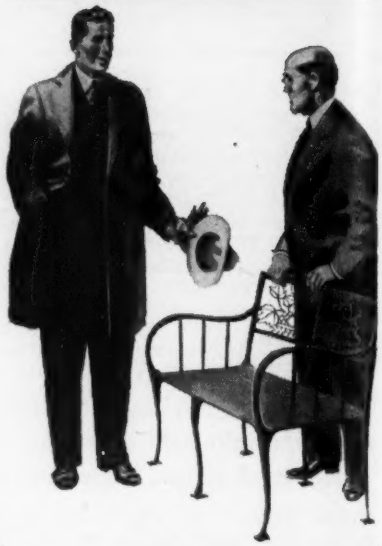

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has increased electric furnace silvery pig iron $5 per ton to $78.75, Niagara Falls, for 14.01 to 14.50 per cent silicon grade. Similar increase is reported at Jackson, O., base to $77.50 per ton. Producer of charcoal pig iron states there is no price advance indicated for this month.

Chicago — Pig iron supply is now in the stage of worsening in this district now that ony 38 of the available 41 blast furnaces are in production. Until early summer when some of the capacity can be re-engaged, it looks like a difficult scramble for iron. One steelmaker who recently blew out a merchant iron producing stack for repairs to require at least three months figures that it may be obliged to hold the unit idle until lake navigation opens because of narrow ore supply. Sufficient ore is on hand to supply all the hot metal needed for steelmaking. Up to this moment, other furnace interests have not followed the lead of a principal merchant iron producer in advancing prices $2 a ton effective Dec. 29. However, all iron now going to consumers, interstate, carries 10 per cent higher freight charges made effective Jan. 5. Illinois Commerce Commission has not yet approved the increase, but the Indiana Commission has.

Philadelphia — Advance of $3 at Bethlehem, Pa., and an increase in the freight rate have boosted the minimum delivered price here to $42.004 on basic, $42.504 on No. 2 foundry, $43.004 on malleable and $43.504 on bessemer. An advance of $3 has also been put into effect at Steelton, Pa. The new base prices at these two points are $40 on basic, $40.50 on No. 2 foundry, $41 on malleable and $41.50 on bessemer. Operation of an additional open hearth at the Alan Wood Steel Co. will draw more hot metal from the company's blast furnaces with the result supply of foundry iron will be a little tighter than had been anticipated. However, output of foundry iron will be at a higher rate than the average for the last several years.

Low phosphorus pig iron has been advanced at Steelton, Pa., to $46, fob furnace. With an increase in freight rate from Steelton to Philadelphia, delivered price on low phosphorus is now $48.592.

Iron Ore . . .

Iron Ore Prices, Page 118

Cleveland — An immediate increase in the price of iron ore has been urged by Cyrus S. Eaton, prominent in iron ore development. He said an advance of $2 to $3 in the price of iron ore would not be out of line with increases that already have taken place in prices of other materials required in steel production. He pointed out that "iron ore is still selling at little more than the prewar figure."

Scrap . . .

Scrap Prices, Page 122

Buffalo — Although leading mill consumers refused to break their price deadlock with dealers, scrap prices advanced $1 to $1.50 a ton on limited tonnages to nonintegrated producers. Prices up to $42 a ton were reported for No. 2 heavy melting steel, which compares with a

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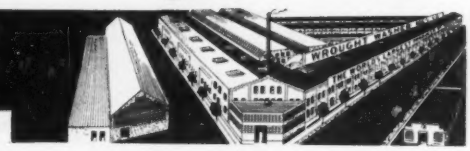

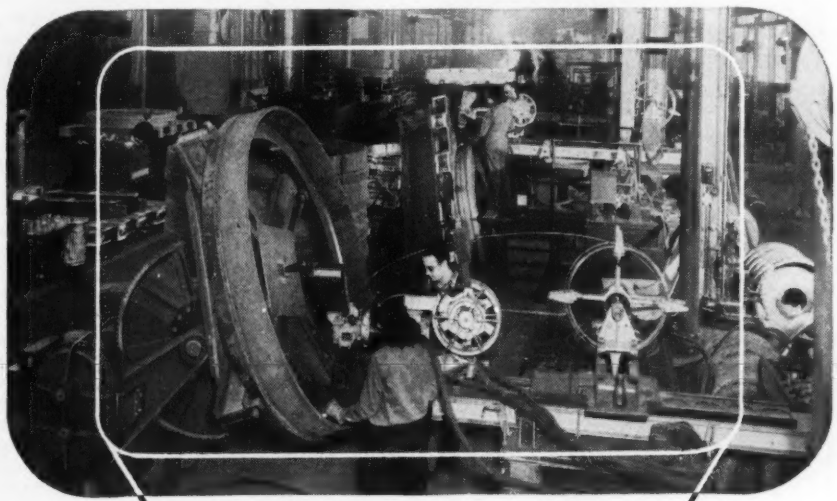

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standing bid of $39.25 from top mills. In view of sales, dealers argued that price ranges should be hiked despite the action of the leading mills. Light sales of No. 1 heavy melting were reported $2 to $3 above sale prices on No. 2 material. Low phos jumped $1 on sales in the district within a range of $47-48. Strength continues to dominate the cast scrap market as supplies are light. Reciprocal deals are also responsible for higher prices. Steel buyers entering into such deals with mills are paying abnormal prices for scrap, in some instances, to fill their end of agreements.

Cincinnati — Cast scrap, rails and railroad specialties are higher as the market still awaits a further test of the formula for prices of mill tonnages. Foundry buying continues active, in the desperate efforts to offset lack of sufficient pig iron. There is also some indication of stronger bids by dealers. Shipments continue slow, not having recovered from holiday influences.

Cleveland—After some weeks of relative quiet in the iron and steel scrap market there were signs last week it may soon become active again. Although large consumers apparently were still adhering to the so-called formula price in effect since last October, there were rumors of purchases being made over the formula. However, these reports were unconfirmed, and after more than two months of holding the line on prices offered for scrap, the large steelmakers were reluctant to decrease their resistance, none of them wanting to be the first to break from the line and offer a higher price on the open market. The steelmakers have been relying increasingly on scrap returned to them from their steel customers at a formula price, which has been approximately double the price of scrap at the end of Office of Price Administration control. However, it is reported steel mills' scrap inventories are shrinking, leaving the mills in a less favorable position to continue to show resistance against scrap prices. It was reliably reported a southern Ohio mill which had not purchased open market scrap since October paid $45 a ton delivered for scrap from the South last week. Nevertheless, at Cleveland the price of No. 1 heavy melting steel remained at $39.00-39.50, and in the Mahoning Valley at $39.50-40.00. However, earmarking of scrap for shipment from steel consumers to mills has further shrunk the supply of scrap available to foundries, with a result prices on cast iron grades moved further upward at Cleveland last week. No. 1 cupola, which had been quoted at $58.00-62.00, now is quoted at $62.00-65.00.

Boston—Raw material supply is critical, notably with steel producers. Scrap is scarce, inventories low with prices stiffening. Yard supplies have not moved at $31.40 to $32.00 shipping point and higher prices are being paid, around $35 and better.

St. Louis—The St. Louis scrap market has not yet felt much effect of the New Year, although some No. 2 melting steel is reportedly being held back on a gamble on higher prices. Shipments have not improved as expected as a result of the end of an income tax year. The year's first railroad lists, however, took a jump on offerings from the Missouri Pacific, Wabash and Cotton Belt railroads. In all, five lists have hit the market the last two weeks, with malleable, rerolling, random and short length rails showing rises of $1 to $3. One sale of railroad malleable at $67 has been reported. The scramble for cast scrap is still on but the supply is some better, with prices stimulating peddlers to hustle collections. There is little evidence of cast hoarding since the prices are regarded as too unstable for speculation. Mill reserves of scrap remain under 30 days.

Philadelphia — Scrap prices continue strong, with various grades at higher levels. Although there has been little consumer buying to test the major open-hearth grades, brokers are having to pay more to cover existing contracts. The market on Nos. 1 and 2 heavy melting steel, No. 1 busheling and Nos. 1 and 2 bundles is nominally higher at $41-42, delivered, and on No. 3 bundles at $39-40. Turnings, low phos and other steel grades are unchanged but strong. Most cast grades are higher with No. 1 cupola at $54-55 delivered, No. 1 machinery at $56-58, charging box cast and heavy breakable cast $53-54, clean auto cast $55-56 and No. 1 wheels $55.

Detroit — Despite soaring prices on No. 1 cupola cast, which are coming close to twice the cost of pig iron, quotations on open-hearth grades are holding firm, although shipments are rather slow at the moment. Inclination of some dealers is to hold onto stocks in the hope the rigid price line of the past few weeks will be broken. The next two weeks should provide the test.

New York — While the leading consumers of open-hearth steel scrap generally continue out of the market, New York brokers' buying prices have advanced to $37 fob shipping point on No. 1 heavy melting steel and to $36 on No. 2 heavy melting steel, No. 1 busheling, and Nos. 1 and 2 bundles, reflecting once again the differential between No. 1 heavy melting and other major open hearth grades.

Until recently very little scrap has been moving here due to weather.

Pittsburgh — Brokers and dealers continue to refuse large tonnage scrap commitments from mills at the $40 level for heavy melting steel, and considerable pressure is building up for higher scrap prices, with mills' inventories steadily being reduced as result of substantial decline in influx of scrap tonnage over the past six weeks. Heavy melting steel has held firm at $40, but advances of $1 to $3 are reported on small lot transactions of cast grades, turnings and railroad items. Sales of No. 1 cupola are reported within the $55 to $55.50 range; malleable at $62 to $63; railroad specialities at $53.50 to $54.50 and short shovel turnings at $36.50 to $37.

Chicago—As mills adhere firmly to their price of $39, delivered, for heavy melting steel, acquisition of dealer material shrinks, forcing them to rely principally upon producer scrap earmarked to them. Inventories are estimated at not over two to three weeks, bringing closer the time for showdown in acquiring new tonnage.

Warehouse . . .

Warehouse Prices, Page 119

New York — To cover increased freight rates, warehouse steel prices are advanced from three to six cents per 100 pounds. With the exception of bars, major carbon steel products, including flat-rolled, plates and structurals, show no improvement in supply; nails are also short. More distributors are getting into balance on bars and are already in that position on cold finished. Stocks include alloys in ample volume to meet demand and sales efforts are centered toward the movement of those grades. First quarter allocations on the short-supply products indicate no improvement in tonnage before next quarter.

Cincinnati — Warehouses are unable to build inventories in sheets and plates, small bars and structurals. Mill shipments are fair but the scarce items are moved as quickly as received. Jobbers foresee no relaxing in demand as long as mill customers seek additional tonnage from jobbers. Price schedules are being altered to reflect higher freight charges, but steel taking Cleveland base stays at old levels.

Pittsburgh—Warehouse steel price quotations are not expected to be influenced by recent 10 per cent interim rail freight rate increase for nearly the entire range of steel products produced here. Distributors state even should the action of one large producer in raising switching charges from .055 to .06 cents per 100 pounds be followed by other interests, there is little likelihood such a move would be reflected in higher warehouse steel prices. No improvement in mill deliveries is indicated this quarter, with outlook very uncertain due to pending industry action on voluntary allocation commitments to meet most urgent requirements of the Marshall Plan and domestic programs.

Philadelphia — Warehouse demand continues highly active and last month, despite the year-end influences, one large distributor here experienced the best month of the entire year. Pressure is very strong for the light flat products, plates and small sizes of bars and angles. Jobbers' prices have advanced as a result of the new freight rates.

Canada . . .

Toronto, Ont.—Production of primary iron and steel shapes in Canada for October amounted to 265,600 net tons, against 256,972 tons in September and 154,193 tons in October, 1946. October production also included 252,404 tons of carbon steel shapes and 13,196 tons of alloy steel shapes.

Shipments of primary iron and steel shapes for October amounted to 203,988 net tons, including 191,287 tons of carbon shapes and 12,701 tons of alloy steel shapes, which compare with total shipments for September of 184,182, including 175,536 tons of carbon and 8646 tons of alloy shapes, and with total shipments of 147,096 tons in October, 1946, which included 138,725 tons of carbon and 8371 tons of alloy steel shapes. For October, 1947, shipment

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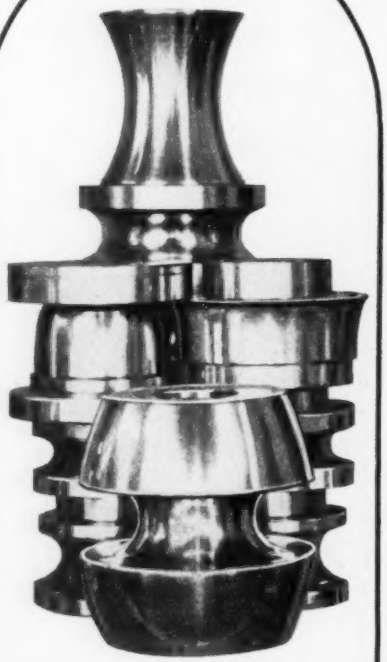

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figures do not include the 70,984 tons that went to producers' own plants or to other plants within the primary industry for further processing.

For the first ten months of 1947, production of primary iron and steel shapes totaled 2,617,224 net tons, and shipments for sale, 1,968,788 tons and deliveries to producers' interchange, 658,709 net tons. In the corresponding period of 1946, production totaled 1,885,495 net tons; shipments for sale, 1,549,783 tons and shipments to producers' interchange, 346,852 tons.

For October, shipments of primary iron and steel shapes included 9153 tons of semifinished shapes; 16,629 tons of structurals; 16,793 tons of plates; 24,529 tons of rails; 50,854 tons of hot-rolled bars; 12,487 tons of pipes and tubes; 15,536 tons of wire rods; 22,161 tons of black sheets; 8055 tons of galvanized sheets; 553 tons of tool steel; 9159 tons of castings, and 18,079 tons of other shapes.

Of the amount shipped for sale during October, 40,387 tons went direct to railways and railway car shops; 12,381 tons to pressing, forming and stamping plants; 19,919 tons to merchant trade products; 25,868 tons to building construction; 11,916 tons to the containers industry; 6329 tons to agricultural equipment; 15,891 tons to the automotive industry; 14,244 tons to machinery plant; 4084 tons to shipbuilding; 5559 tons to mining, lumber, etc . . . and 2971 tons to miscellaneous industries. Wholesalers and warehousing accounted for 30,293 tons and exports for 14,146 tons.

Steel Allocation Plan Beginning To Take Form

(*Continued from Page* 38)

up a staff to observe and report on compliance. This staff will have to determine the effectiveness of voluntary action. If the voluntary program does not work out, it is expected recommendations will be made to the President that compulsory allocation powers be asked of Congress —and at an early date.

Right-hand man to Secretary Harriman in carrying out the President's Executive Order of Jan. 3 is H. B. McCoy, director of the Office of Domestic Commerce and of the Office of Materials Distribution. The planning for voluntary allocations has been largely under his direction. He is preparing to draw upon his two present offices to a large extent in order to furnish such assistance—research, clerical, etc., as the allocations staff now about to be created will require. Much thought has been given to the whole subject in the Office of Domestic Commerce and the Office of Materials Distribution.

One of the major ideas mentioned as inviting thorough discussion is that of finding substitutes for certain steel uses, such as aluminum. The thought is that as substitutes are decided on for certain types of products, the steel industry can cut down its shipments to manufacturers of such products.

Complicated Problems — Such an approach might provide some complicated problems, adding to the amount of co-operation that might be needed. For instance, to push aluminum as a substitute for steel in a large way would require allocation of more power to expand aluminum production. Another suggested approach aimed at conserving steel is seen in the adoption of more standardization — as in containers. This might be accomplished by reducing the number of types and sizes.

Secretary Harriman did not recommend actual allocations at the Thursday conference with steel officials. But he was prepared to report that the following are the most pressing steel needs as the government sees the overall picture: Rail freight cars; farm equipment; petroleum production, refining and transportation equipment; nitrogen (fertilizer) production equipment; coal mining equipment; coal processing equipment such as coke ovens and accessory apparatus; certain iron and steel producing equipment; electric generating equipment.

The most important control action to date is the new export licensing policy which the Office of International Trade placed in operation Jan. 2. The principal purpose of this was to wipe out the "gray market" under which some free-lance importers were marking up prices several hundred per cent above domestic levels on scarce goods.

"Under the new procedure," according to Thomas C. Blaisdell, director of the Office of International Trade, "OIT will grant export licenses for most controlled commodities on the basis of the lowest price for comparable merchandise and similar conditions of supply. This will permit wider competition in the export trade and will aid importing nations in conserving scarce dollar exchange."

Can Use Price Criteria—He went on to explain that the new anti-inflation bill distinctly authorizes the use of price criteria in the licensing of exports, and that the exercise of this power is necessary as a part of the battle against inflation, since "much of the goods being bought for export are paid for by American taxpayers' dollars."

Dr. Francis T. McIntyre, chief of OIT's Export Branch, does not think

the average legitimate exporter will be hurt by the new ruling. Where a manufacturer quotes a lower price than a merchant exporter, he says the manufacturer will be favored. But, he points out, most established exporters have their regular connections and sell at the manufacturer's price.

"What we are trying to prevent is the sale of a 3.7 cent item at 20.7 cents for export; we hope to encourage the sale of a 3.7 cent item at not over 4 point zero for export," said Dr. McIntyre.

The Office of Defense Transportation, whose powers now have been extended into 1949, will continue with its present policies of allocating transportation facilities. "We have been trying right along to keep abreast of needs," Director J. M. Johnson told STEEL, "and we do not see any immediate need for revision of the present policy."

The voluntary allocations program today is aptly described as in the embryo stage. It is only beginning to take form, and until Commerce Secretary Harriman begins to freeze organizational details there is no certainty as to what extent allocations procedure will be resorted to. However, government officials emphasize there is no intention to engage in an overall allocations program such as prevailed during the war. All that is sought now is to provide so-called essential industries with steel and other necessary materials. Consequently, at the moment, only a relatively few industries are under consideration for priorities attention—seven or eight at most. There may be more, and, undoubtedly, pressure for priorities or allocation assistance will intensify as the separate industries seek recognition, especially should allocations to so-called essential industries result in curtailment of shipments to the so-called less essential ones.

Both the Department of Agriculture and the Department of Interior have already taken action looking to the carrying out of their responsibilities under the anti-inflation law. Agriculture, with the act's only grant of mandatory allocation powers (it has authority to limit the use of grains for manufacture of liquor, but only for a period of five weeks), has issued a grain conservation order and is preparing to intensify its job of educating the public in food matters, how to prepare food for storage, how to prevent spoilage in storage, when to stop feeding livestock and put it on the market, etc.

The Interior Department has placed in motion a program to con-

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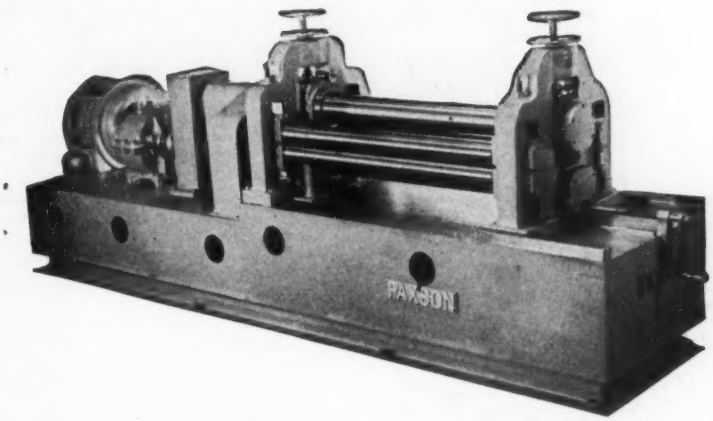

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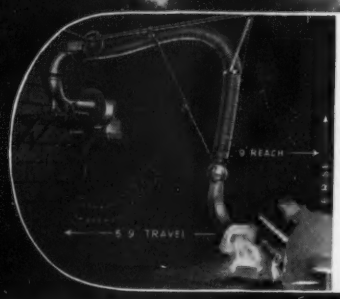

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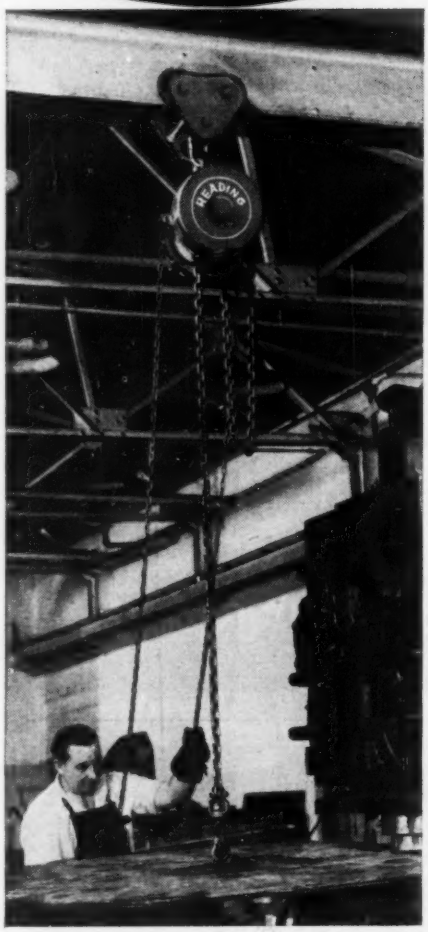
PATENTED Sand Blast and Dust Collecting Equipment

RUEMELIN FUME COLLECTOR

A 3888-½R3

TO HOLD LOADS
Accurately
WITH SAFETY



The positive acting friction brake on the Reading Multiple Gear Chain Hoist makes possible accurate positioning of the work or load with complete safety.
The maple inserts in the brake wheel hold the load tightly against the friction disc till the load is to be moved. Lowering requires only that the operating chain be pulled in the down direction. The load lowers without slipping or speeding up.
Each Reading Multiple Gear Chain Hoist is so well built that it has a guaranteed overload capacity of 25% in every size from ¼ ton to 25 tons.
Investigate Reading Hoists for your materials handling problems. Consult your distributor or write us direct.

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CHAIN HOISTS • ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

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serve oil, gas and coal. It has written an executive order which will call for voluntary methods principally.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2850 tons, bridge superstructure, relocation U. S. highway No. 56, Center Hill reservoir project, DeKalb county, Tennessee, to Nashville Bridge Co., Nashville, Tenn.; contract awarded by U. S. Engineer, Nashville.

2475 tons, state bridge, Steuben county, New York, to American Bridge Co., Pittsburgh.

1600 tons, Uris Bros. office building, 59th St. and Park Ave., New York, to Bethlehem Steel Co., Bethlehem, Pa.

1550 tons, Simon Brothers apartment, 68th St. and Fifth Ave., New York, to Harris Structural Steel Co., New York.

1000 tons, bakery, National Biscuit Co., East Liberty, Pa., to American Bridge Co., Pittsburgh.

700 tons, power house addition, Meadows station, Hartford Electric Light Co., Hartford, Conn., to Lehigh Structural Steel Co., Allentown, Pa.; Stone & Webster Engineering Corp., Boston, contractor-engineer.

640 tons, also 60 tons reinforcing bars, Providence-Washington Insurance building, Providence, R. I., to Bethlehem Steel Co., Bethlehem, Pa.; Gilbane Construction Co., Providence, general contractor.

475 tons, paper mill building, Atlantic Carton Co., Norwich, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

400 tons, plant addition, Narragansett Electric Co., Providence, R. I., to Lehigh Structural Steel Co., Allentown, Pa.; United Engineers & Constructors, Inc., Philadelphia, general contractor; Bethlehem Steel Co., Bethlehem, Pa., awarded 80 tons, reinforcing bars.

365 tons, state bridge, Chenango county, New York, through Lane Construction Co. to Bethlehem Steel Co., Bethlehem, Pa.

360 tons, paper storage building, Chicago Rotoprint Co., Chicago, to Wendnagel & Co., Chicago.

340 tons, building, H. L. Greene Co., Lancaster, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

300 tons, Public roads bridge, Oregon state, to Poole & McGoligle, Portland.

275 tons, plant addition, Sloane-Blabon Corp., Philadelphia, through Walter Kidde to American Bridge Co., Pittsburgh.

227 tons, building, American Weekly Inc., Chicago, to Hansell-Elcock Co., Chicago; Carroll Construction Co., Chicago, contractor.

200 tons, Washington state highway bridge, to Poole & McGoligle, Portland.

200 tons, power plant, Minneapolis, to Bethlehem Steel Co., Bethlehem, Pa.

190 tons, building, Triangle Package Machinery Co., Chicago, to Wendnagel & Co., Chicago.

150 tons, addition to Zellerbach paper and bag plant, Port Townsend, Wash., to Isaacson Iron Works, Seattle.

120 tons, grand stand, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, steel girder superstructure, Wahkiakum county, Washington; bids Jan. 13; steel furnished by state.

100 tons, building, General Foods Corp., Evart, Miss., to Bethlehem Steel Co., Bethlehem, Pa.

Unstated tonnage, penstock gates, U. S. Engineer, Little Rock, Ark., to Philips & Davies, Jenton, O., $205,000.

Unstated tonnage 50 x 50 ft radial gates, Angostura project, Bureau of Reclamation, Denver, to Virginia Bridge Co., Denver, Colo., $150,000 f.o.b. Memphis.

STRUCTURAL STEEL PENDING

1,000 tons, Coulee right power house and appurtenances; bids to Denver in January.

540 tons, bridge, No. 5514, St. Paul, Minn., for state; bids Jan. 9.

200 tons, bulkhead, Spec. 2050, Odair, Wash., for U. S. Bureau of Reclamation; bids Jan. 5.

165 tons, highway bridge, Mounds City, Ill.; bids Jan. 27, U. S. Engineer, Louisville, Ky.

140 tons, sheet piling, Pennsylvania Railroad, Chicago; Fitzsimons & Connell Dredge Co., Chicago, contractor.

135 tons, bridge, No. 3986, Red Lake Falls, Minn., for state; bids Jan. 9.

125 tons, Glacier highway bridge, Alaska; bids to Federal Works Agency, Juneau, Jan. 26.

Unstated, Oregon state Sandy river bridge; General Construction Co., Portland, low, $333,260.

Unstated, steel and concrete Montana state bridges in Gallatin, Jefferson and Wheatland counties; new bids Jan. 27, 28 and 29, to Helena; bids opened Dec. 10 rejected.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1500 tons, Boysen dam, Thermopolis, Wyo., for U. S. Bureau of Reclamation, to Sheffield Steel Corp., Kansas City, Mo.; Morrison Knudsen Co., Boise, Idaho, contractor.

200 tons, General Motors building, Seattle school, to Yakima, Wash., and other construction to Bethlehem Pacific Steel Co., Seattle.

146 tons, addition, Healthwin Hospital, South Bend, Ind., to Ceco Steel Products Corp., Cicero, Ill.; Gust K. Newburgh Construction Co., Chicago, contractor.

REINFORCING BARS PENDING

2,040 tons, West Canal Columbia basin and Dry Coulee siphons; bids to Denver Jan. 9 and Jan. 12 respectively.

1,525 tons Grand Coulee right power house and switchyard, etc.; bids to Denver late January.

375 tons, warehouse, Pittsburgh Plate Glass Co., Milwaukee; bids Jan. 7.

175 tons, Washington state liquor warehouse, Seattle; bids Jan. 7.

Unstated, water works, Evanston, Ill., for city; bids Feb. 3.

Unstated, flood control, East Peoria, Ill., for War Department; bids Jan. 15.

Unstated, Overlake high school, Seattle; Mowat Construction Co., Seattle, awarded general contract, $410,000.

Unstated, warehouse and office for Goodyear Tire & Rubber Co., Seattle; S. S. Mullen, Seattle, awarded general contract, $250,000.

PLATES . . .

PLATES PENDING

Unstated, 2,526 feet #156 Lennox type metal flume; bids to Reclamation Bureau, Bend, Oregon, Jan. 27.

PIPE . . .

CAST IRON PIPE PENDING

Unstated, 20 miles various sizes for municipal system expansion in 1948, for Spokane, Wash.

RAILS, CARS . . .

LOCOMOTIVES PLACED

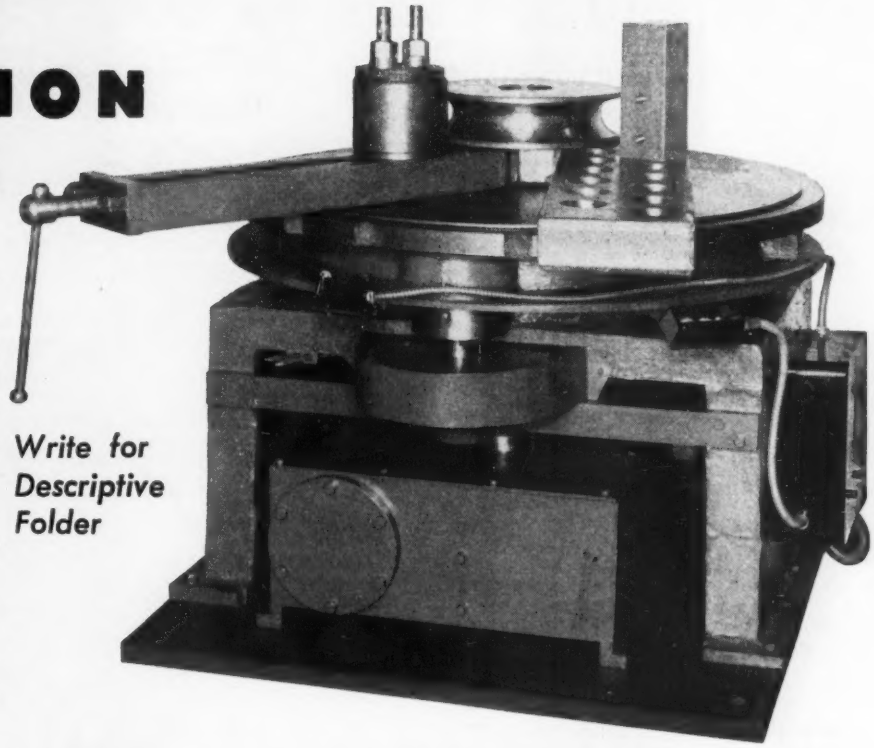
Chicago Great Western: 32 diesel-electric locomotives as follows: Five 1000-horsepower switchers, nine 2000-horsepower switchers, three 3000-horsepower freight and four 3000-horsepower passenger, to Electro-Motive Division of General Motors Corp., LaGrange, Ill.; eight 1500-horsepower switchers and three 1500-horsepower passenger, to American Locomotive Co., New York.

Toledo, Peoria & Western, one 3000-horsepower diesel-electric locomotive, to Electro-Motive Division, La Grange, Ill., General Motors Corp.

PEDRICK PRODUCTION BENDERS

for

Pipe and Concrete Reinforcing Bars



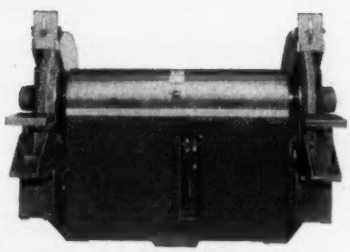
When a production bender is used for bending reinforcing bars, a high and variable speed is very much to be desired. A four speed transmission enables this machine to bend large bars at slow speed and smaller bars at high speed, and the Pedrick feature of multiple production makes this machine a very useful addition to the contractor's equipment. The machine will make bends to any curvature up to 180° automatically without manual attention other than to load and unload the machine.

Write for Descriptive Folder

PEDRICK TOOL & MACHINE CO.

3640 N. Lawrence St., Philadelphia, 40, Pa.

Built for HEAVY DUTY



The Marschke Vari-Speed Grinder, the largest and most efficient of all heavy duty floor stand grinders, combines massive ruggedness with the dependability of accurately controlled wheel speed.

A pair of variable speed sheaves are linked with the wheel guard adjustment in such manner that spindle speeds are automatically changed to maintain constant cutting speed when guards are reset to follow the wheel wear. This machine may also be equipped as a Multi-Speed Grinder, thus giving a choice of three speed changes.

These machines are made for wheel sizes ranging from 20" to 30" diameters and up to 4" widths, driven through multiple strand V belts and from 20 HP to 40 HP motors.

For maximum metal removal at minimum abrasive cost, you need this Marschke grinder. Write for further information today.

VONNEGUT BRUSH BACKED SANDER HEADS · VONNEGUT ELECTRIC MOULDERS · MARSCHKE GRINDERS & BUFFERS

VONNEGUT MOULDER CORPORATION

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WELDING ENGINEERING CO.

MANUFACTURERS • DISTRIBUTORS

MILWAUKEE 2, WISCONSIN

Offices and Agents all over the United States

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

LONG BEACH, CALIF.—Long Beach Spring & Forge Inc. has been formed by Fred F. Johnson and associates with a capital of $100,000. Firm is represented by Frank M. Linnell, 401 Jergins Trust Bldg.

SAN JOSE, CALIF.—General Electric Co., 230 Montgomery St., San Francisco, plans to build a $1,400,000 motor plant. Engineer is Leland S. Rosener, 233 Sansome St., San Francisco.

CONNECTICUT

ANSONIA, CONN.—American Brass Co., 58 Liberty St., has awarded a $300,000 contract to W. J. Megin Inc., 51 Elm St., Naugatuck, for construction of a 3-story office.

BRIDGEPORT, CONN.—Swan Engraving Co., 22 Harrison St., will build a $70,000 plant. Engineer is Fletcher Thompson Inc., 211 State St.

FLORIDA

FLORIDA—E. I. duPont de Nemours & Co., Wilmington, Del., has leased ilmenite-bearing lands in the north central area of the state. Ilmenite is the ore from which white titanium pigments are manufactured.

GEORGIA

ATLANTA — Southern Railway will build a $75,000 diesel repair shop.

VALDOSTA, GA.—Metal Products Inc., c/o contractor, has awarded a $68,000 contract to J. N. Bray Co., Box 294, for construction of a plant.

ILLINOIS

CHICAGO—Standard Process Corp., 734 Lexington St., has awarded a contract to Enjay Construction Co., 105 W. Madison St., for erection of a factory.

KANKAKEE, ILL.—Florence Stove Co. has awarded a contract to Campbell-Lowrie-Lautermilch, 400 W. Madison Ave., Chicago, for construction of a factory addition.

IOWA

CLINTON, IOWA—Chicago & North Western Railroad, E. C. Vandenburgh, chief engineer, 400 W. Madison St., Chicago, has awarded a $91,830 contract to Ogle Construction Co., 38 E. Jackson Blvd., Chicago, for erection of locomotive coaling and sanding plants.

KANSAS

KANSAS—Stanolind Oil & Gas Co., Tulsa, Okla., E. F. Bullard, president, will build an $80 million synthetic gasoline plant in Kansas to process motor fuels and related chemical products from natural gas and air. Garden City and Dodge City are being considered as possible sites.

LOUISIANA

LAFAYETTE, LA.—Evans Electrical Supply Co., 950 Nicholdson Dr., Baton Rouge, will build a $120,000 plant here.

MARYLAND

BALTIMORE—J. H. Filbert Co., 816 N. Franklintown Rd., has let a $450,000 contract to Armiger Construction Co., 2127 Maryland Ave., for erection of a warehouse and processing building at 2415 W. Franklin St.

MICHIGAN

WILLOW RUN, MICH.—Kaiser-Frazer Corp. has retained Wolff & Phillips, Portland, Oreg., to design and supervise construction of a $12 million expansion program here. Plan calls for engineering, styling, experimental and servicing department buildings.

MISSOURI

INDEPENDENCE, MO.—Independence Stove & Furnace Co., 630 S. Cottage St., has awarded a contract to Weeks Construction Co., 1814 Harrison St., for erection of a porcelain plant addition.

JOPLIN, MO.—H. & H. Mfg. Co., 830 Joplin St., has awarded a contract to Ozark Construction Co. to build a plant between 13th and 17th Sts. Total cost, including equipment, will be $70,000.

ST. LOUIS—Continental Can Co. Inc., 100 E. 42nd St., New York, will build a plant here. Engineer is Walter Kidde Constructors Inc., 140 Cedar St., New York.

ST. LOUIS—Monsanto Chemical Co., 1700 S. Second St., has awarded a $60,000 contract to I. E. Millstone Construction Co., 4343 Clayton, for erection of a 1-story testing laboratory at 125 W. Lafayette.

ST. LOUIS—Mallinckrodt Chemical Works, 3600 N. Second St., has awarded a contract to Dickie Construction Co., 517 Louderman Bldg., for erecting nine chemical storage tanks and other facilities at 105 Angelrodt.

ST. LOUIS—Missouri Pacific Railroad, R. P. Hart, chief engineer, Missouri Pacific Bldg., will build additions to its repair shops, 3001 Chouteau Ave., at a cost of $101,400.

NEW JERSEY

NEW BRUNSWICK, N. J.—Triangle Conduit & Cable Corp., Jersey Ave., has awarded a $650,000 contract to Wigton-Abbott Corp., 1225 South Ave., Plainfield, for construction of an addition to a cable manufacturing plant.

NEW YORK

BAYSIDE, N. Y.—Sylvania Electric Products Co. Inc., 35 Bell Blvd., has awarded a $1 million contract to John H. Eisele Building Co., 18 E. 41st St., New York, for construction of a research laboratory.

TOMPKINS COVE, N. Y.—Rockland Power & Light Co., 12 N. Broadway, Nyack, will build a generating plant here. Engineer is Burns & Roe Inc., 233 Broadway, New York.

NORTH CAROLINA

CANDOR, N. C.—Farmers' Implement Co. Inc. has been incorporated by J. C. Wyatt and associates with a capital of $100,000 to deal in farm machinery.

GOLDSBORO, N. C.—Weil's Fertilizer Works Inc. has been incorporated by Lionel Weil and associates with a capital of $100,000.

GREENSBORO, N. C.—Southern Oxygen Co., c/o R. B. Swope, president, 2900 Kenilworth Ave., Washington, will build a $75,000 oxygen plant.

OHIO

AKRON, O.—Goodyear Tire & Rubber Co. expects full production of rubber latex and pliofilm to start next summer in its plant C, formerly occupied by its Goodyear Aircraft Corp. Conversion and expansion work is now in progress.

BELLAIRE, O.—Ohio Public Service Co. has placed in operation here the first generating unit to be built in its five-year, $40 million construction program. Preliminary work for a similar turbine in the company's Edgewater generating station, Lorain, is in progress.

BEREA, O.—Ohio Nut & Bolt Co., R. J. Whelan, president, now has patents involving a new utilization for brazing metal parts together. This new business for Ohio Nut & Bolt will be housed in separate quarters, to be built at a cost of at least $50,000.

CIRCLEVILLE, O.—General Electric Co. has awarded a $2,500,000 contract to Steinle-Wolfe, Fremont, for construction of a fluorescent tube factory here. Work will begin this month, and factory production is expected by the latter part of this year.

CLEVELAND—Precision Castings Co., 12600 Berea Rd., will build a $150,000 die shop addition.

CLEVELAND—Olga Coal Co., Union Commerce Bldg., has been incorporated by Benjamin F. Fiery and associates with a capital of $500,000. Firm is successor to Olga Coal Corp. which was affiliated with Carter Coal Co., recently sold to steel interests. Olga's chief works is in Coalwood, W. Va.

CLEVELAND—Crescent Metal Products Inc., 18091 St. Clair Ave., has been incorporated by George T. Baggott with a capital of $250,000 to manufacture sheet metal products and fluorescent lighting fixtures.

MANSFIELD, O.—Dominion Electric Co. has begun construction of an $82,000 plant addition on Elm St. Facility is expected to be completed in three months.

MANSFIELD, O.—Mansfield Tire & Rubber Co. has purchased for $90,000 the site for its proposed No. 2 plant on W. Sixth St.

SMITHVILLE, O.—Troyer Mfg. Co. has been incorporated by Abner J. Troyer and associates with a capital of $100,000 to manufacture special farm machinery.

PENNSYLVANIA

KENT, PA.—Rochester & Pittsburgh Coal Co., Indiana, has awarded a $120,000 contract to Williamson Shaft & Construction Co., 137 Tenth St., Indiana, to construct a mine shaft and related facilities.

PHILADELPHIA—Pennsylvania Railroad has placed a $615,000 order with New York Shipbuilding Co., Camden, N. J., for four car floats. Railroad has also placed a $329,000 order with American Bridge Co., Pittsburgh, for ten lighters.

WEST HOMESTEAD, PA.—American Brake Shoe Co., Southern Wheel Division, Mahwah, N. J., has awarded an $85,000 contract to Ragner Benson, Rice St., Chicago, for construction of plant additions and alterations.

TEXAS

AMELIA, TEX.—Sun Oil Co., Beaumont, has awarded a $300,000 contract to Austin Co., National Bank Bldg., Houston, for construction of a laboratory, shop and office building.

PECOS, TEX.—Western Refineries Corp. plans a $170,000 construction project to include a 30-mile oil pipeline from Tunstill field to Orla, erection of loading racks at Orla, and a pipeline gathering system in Tunstill field near Pecos.

TEXAS CITY, TEX.—Federal government is spending $2,700,000 for construction of a plant here to recover from waste liquids hydrochloric acid, silver and copper.

CANADA

CALGARY, ALTA.—Department of Lands & Mines, Edmonton, Alta., plans to build a gas pipeline from Calgary to Winnipeg, Man., with lateral lines to Regina, Brandon and Moose Jaw. Cost is estimated at $45 million.

HAMILTON, ONT.—Procter & Gamble Co. of Canada Ltd., Burlington St. E., has awarded a $1,500,000 contract to W. H. Cooper Construction Ltd., Medical Arts Bldg., for erection of a 4-story factory.

OTTAWA, ONT.—National Research Council, Sussex St., has awarded a $130,000 contract to H. Dagenais, 186 St. Patrick St., to repair a 4-story laboratory and office building.

HAVRE ST. PIERRE, QUE.—Kennecott Copper Corp., c/o Hon. M. Duplessis, Quebec City, will build a $2 million smelting plant 30 miles from here.

MONTREAL, QUE.—Montreal Lithographing Co. Ltd., 1685 Ontario St. E., has awarded an $80,000 contract to H. C. Johnston Co. Ltd., 1502 St. Catherine St. W., for additions to a plant on Ontario and Papineau Sts.

YELLOWKNIFE, NORTH WEST TERRITORY—Discovery Yellowknife Gold Mines Ltd. plans to build a 150-ton mill and other facilities at a cost of $125,000.